Bath Feasibility Study

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of Transportation

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Executive Summary

The Bath Feasibility Study documents a study of the U.S. Route 1 (Route 1) Corridor in the City of Bath. The purpose of this study is to develop a transportation master plan of feasible and prudent transportation options that are multimodal and meet the needs of the region and the local community. This study evaluates improvements to Route 1 in conjunction with proposed alterations to the existing Rockland Branch Railroad line to accommodate the potential restoration of passenger rail service between Brunswick and Rockland. The study considers pedestrian and bicycle facilities and other multimodal services. Finally, the study considers the benefits to Route 1 that would be achieved if a new State Route 209 (Route 209) Spur were implemented between Route 1 and the south end of the City of Bath, in the vicinity of Castine Ave. and Spring St., near Bath Iron Works' south gate.

Public participation for the Bath Feasibility Study was initiated early in the study through establishment of a Steering Committee. The Steering Committee was comprised of members of the community, representing residents, business owners, and elected officials. The role of the Steering Committee was to provide input to the Study Team and facilitate communication of public comments and concerns into the development of the study goals and objectives, the Feasibility Study Purpose Statement, and the development and evaluation of options. A total of six Steering Committee meetings were held over the course of the study. These meetings were conducted as working sessions, in which the Study Team presented material for review to the Steering Committee, and the Steering Committee was asked to comment and provide input. In addition, two public meetings were held to present study information and to accept public input. Following distribution of the Draft Bath Feasibility Study report, a meeting was held with the Bath City Council to present study findings and accept input towards formulation of final study recommendations.

Together with the Steering Committee, the Study Team formulated the Feasibility Study Purpose Statement to guide the development and evaluation of improvement options for the study corridors. Each option was evaluated against the Feasibility Study Purpose Statement.

The need to conduct the Bath Feasibility Study is based on the fact that the Route 1 viaduct is nearing the end of its structural life, according to the MaineDOT Bridge Maintenance Division. Interim repairs to extend the life of the viaduct are being investigated by MaineDOT. However, the viaduct will need to undergo major rehabilitation or replacement within the next 10-15 years. Hence, the No-Build Option is not a prudent and feasible long-term option for the viaduct.

Three improvement options plus one variation were developed for Route 1 in the Commercial Zone, which is defined for purposes of this study as the section of Route 1 from Congress Avenue to High Street. Options in the Commercial Zone are designated with the prefix "C." Two of these "C" Options were carried into the Build Strategies.

Five improvement options were developed for Route 1 in the Downtown Zone, which is defined for purposes of this study as the section of Route 1 from High Street to the Sagadahoc Bridge. Options in the Downtown Zone are designated with the prefix "D." Two of these "D" Options were carried into the Build Strategies.

In addition to the Route 1 Options, a single option for the potential Route 209 Spur was developed based on a previous MaineDOT study completed in 1995. There are other potential alignment options for a Route 209 Spur. These were not considered as part of this Bath Feasibility Study because the primary purpose for including a potential Route 209 Spur in this study is to determine its utility in positively affecting traffic volumes and operations on Route 1.

The Route 209 Spur would improve regional mobility by reducing traffic volumes along Route 1 through the Commercial Zone and by reducing traffic volumes along High Street near Route 1. However, these reductions in traffic would not reduce the required Route 1 cross section of either Option C-1 or Option C-1 w/Crossover in the Commercial Zone, or Options D-1 or D-4 in the Downtown Zone. The traffic reductions may improve two high-crash locations by diverting traffic away from them: 1) the Leeman Highway on-ramp to Route 1 northbound, and 2) the High Street on-ramp to Route 1 southbound.

Finally, eight railroad options plus three variations were developed and evaluated. Four of these options were carried into the Build Strategies.

The options for Route 1, the Route 209 Spur, and the Railroad Alignments were evaluated as individual options in their respective geographic area, or mode. Then they were evaluated for compatibility with other individual options, and finally combined into packages of improvements, called Build Strategies, as shown below.

Build Strategies

	Build Strategy A	**Build Strategy B**	**Build Strategy C**	**Build Strategy D**
Option C-1	√	√		
Option C-1 w/ Crossover			√	√
Option C-2				
Option C-3A				
Option D-1	√		√	
Option D-2				
Option D-3				
Option D-4		√		√
Option D-5				
RR Option #1		√ or		√ or
RR Option #3		√ or		√ or
RR Option #5		√		√
RR Option #7	√		√	
Estimated Cost	$44.42m	$41.35-45.25m	$46.42m	$43.35-47.25m
Cost With Route 209 Spur	$49.42m	$46.35-50.25m	$51.42m	$48.35-52.25m

m = millions. Costs are in 2003 dollars

Build Strategy A combines Route 1 Options C-1 and D-1 with Railroad Alignment Option #7 into a package that is fundamentally similar to the existing condition. However, design features are improved to meet current design guidelines, traffic capacity is increased to meet future travel demand, accessibility to Downtown Bath is improved, aesthetics and gateway features are improved, and pedestrian and bicycle accommodations are improved. Like the existing condition, a signalized four-way intersection would not be included at the Route 1 intersection with the Bath Shopping Center in the Commercial Zone. Like the existing conditions in the Downtown Zone, Route 1 would be carried on an elevated viaduct, and the railroad would be maintained at-grade with Leeman Highway, although on a slightly modified alignment. The total estimated cost of Build Strategy A is $44.42 million in 2003 dollars, or $49.42 million with the Route 209 Spur.

Build Strategy B combines Route 1 Options C-1 and D-4 with any of the three Railroad Alignment Options #1, #3, or #5. The primary difference between Build Strategies B and A is in the Downtown Zone, where Route 1 would be at-grade, with controlled access via on- and off-ramps. With Route 1 at-grade, it is necessary to either relocate or grade-separate the existing railroad line. Railroad Alignment Options #1 and #5 would relocate the rail line, while Railroad Alignment Option #3 would grade-separate the rail line. The costs of these different rail options are of similar magnitude, ranging from $20.9 million to $24.8 million. A major concern with Railroad Alignment Options #1 and #5 is the severe property impact that would occur on the south side of Route 1. Further assessment of the potential transportation benefits accrued by restoring passenger rail in the corridor versus the adverse property impacts is needed. It is noted that Railroad Alignment Option #1 would reduce track distance in the Railroad Study Area by 0.85 miles, while Railroad Alignment Option #5 would reduce track distance in the Railroad Study Area by only 0.07 miles. An unresolved issue with Railroad Alignment #3 is the practicality of relocating the rail tracks from the lower deck to the upper deck of the Carlton Bridge. Since Railroad Alignment Option #3 would not reduce track distance in the Railroad Study Area, further assessment of the potential transportation benefits accrued by restoring passenger rail in the corridor versus the practicality of modifications to the Carlton Bridge is needed. The total estimated cost of Build Strategy B would range from $41.35 to 45.25 million in 2003 dollars, depending on which Railroad Alignment Option is implemented, or $46.35 to $50.25 million with the Route 209 Spur.

Build Strategy C would provide the same options (Route 1 Option D-1 and Railroad Alignment Option #7) as Build Strategy A in the Downtown Zone, but would use Option C-1 w/ Crossover instead of Option C-1 in the Commercial Zone. Build Strategy C would provide all the same benefits as Build Strategy A, plus the crossover would provide improved accessibility across Route 1 at an added cost of approximately $2 million. The total estimated cost of Build Strategy C is $46.42 million in 2003 dollars, or $51.42 million with the Route 209 Spur.

Build Strategy D would provide the same options (Route 1 Option D-4 and Railroad Alignment Options #1, #3, or #5) as Build Strategy B in the Downtown Zone, but would use Option C-1 w/ Crossover instead of Option C-1 in the Commercial Zone. Build Strategy D would provide all the same benefits as Build Strategy B, plus the crossover would provide improved accessibility across Route 1 at an added cost of approximately $2 million. Build Strategy D also would have the same issues and concerns in the Downtown Zone as Build Strategy B. The total estimated cost of Build Strategy D would range from $43.35 to 47.25 million in 2003 dollars, depending on which Railroad Alignment Option is implemented, or $48.35 to $52.25 million with the Route 209 Spur.

Route 1 Options in the Commercial and Downtown Zones were developed to accommodate and enhance pedestrian and bicycle movements in, and across the Route 1 corridor. They also are compatible with planned regional and national trails.

In addition, an access management strategy was developed to close, consolidate, relocate, or reconfigure driveways in the Commercial Zone to improve traffic flow and enhance safety.

Following distribution of the Draft Bath Feasibility Study report to the Steering Committee in March, 2005, the Study Team conducted three meetings between April and July, 2005: a final Steering Committee meeting; a public informational meeting; and, a City Council presentation were held to receive comment as input to the Study Team in formulating final study recommendations.

Input received at the last Steering Committee meeting is summarized as follows:

1. The Steering Committee concurs with the screening of options as presented and summarized in the four Build Strategies.
2. The Steering Committee indicated a preference for Build Strategy C, which consists of Option C-1 w/Crossover, Option D-1, and Railroad Option #7.
3. In the Commercial Zone, the Steering Committee indicated strong opinions that a wide landscaped median is important to traffic calming and aesthetics along this section of Route 1. A concrete median barrier is highly undesirable from the perspective of traffic calming and aesthetics.
4. In the Commercial Zone, the Steering Committee prefers Option C1 w/Crossover because it provides north-south connectivity for both pedestrians and vehicles.
5. In the Downtown Zone, the Steering Committee supports Option D-1 and does not support Option D-4. Some members of the Steering Committee believe that the Evaluation Matrix-Route 1 "D" Options (Table 13, page 80) ratings for Option D-4 related to aesthetics, community visibility, cultural and historic preservation are too favorable.
6. For the Route 209 Spur, the Steering Committee concurs that the Route 209 Spur should not be advanced as an effective measure in altering the roadway needs in the Route 1 Corridor. Any further advancement of the Route 209 Spur should be based on its own merits, and thus is not recommended at this time.

Input received at the public informational meeting is summarized as follows:

1. Of those expressing an opinion, there was consensus that Build Strategy C, without a Route 209 Spur, should be advanced in the project development process.
2. Comment was made that if a Route 209 Spur were studied at some point in the future, other alignments, including a longer spur further south of the developed areas of the City of Bath should be evaluated.

Input received from the Bath City Council is summarized as follows:

1. The City Council supports elements of Build Strategy C, specifically advancing Option D-1 in the Downtown Zone and not advancing the Route 209 Spur at this time.
2. In the Commercial Zone, several City Councilors expressed concern with the provision of north-south connectivity for vehicular traffic, as provided by Option C-1 w/Crossover. There was unanimity in the opinion that north-south

connectivity across Route 1 is needed for pedestrians, but not necessarily for vehicular traffic. At the point in time when improvements in the Commercial Zone are advanced in the project development process, further dialogue is needed within the community and with MaineDOT regarding Option C-1 and Option C-1 w/Crossover to confirm community desire for the vehicular connection between the north and south sides of Route 1.

Recommendations

Based on the findings of the Bath Feasibility Study and input from the Steering Committee, Bath City Council, and the general public, Build Strategy C, without advancing a Route 209 Spur at this time, is the recommended strategy for the Route 1 Corridor in the City of Bath. Build Strategy C consists of Option C-1 w/Crossover in the Commercial Zone, Option D-1 in the Downtown Zone, and Railroad Option #7 in the Downtown Zone.

Based on the fact that the Bath Viaduct is nearing the end of its structural life, a major rehabilitation or replacement is needed within the next 10-15 years. Projected traffic volumes warrant widening of the Bath Viaduct to four lanes. However, in the Commercial Zone, regional mobility needs are being met by the existing facility. Therefore, advancement of improvements to Route 1 in the Commercial Zone must be at the initiative of the City of Bath. At the point in time when further consideration of improvements in the Commercial Zone occurs, further dialogue is needed within the community and with MaineDOT regarding Option C-1 and Option C-1 w/Crossover to confirm community desire for the vehicular connection between the north and south sides of Route 1.

Chapter 1: Introduction

The Bath Feasibility Study documents a study of the U.S. Route 1 (Route 1) Corridor in the City of Bath. The purpose of this study is to develop a transportation master plan of feasible and prudent transportation options that are multimodal and meet the needs of the region and the local community. This study evaluates improvements to Route 1 in conjunction with proposed alterations to the existing Rockland Branch Railroad line to accommodate the potential restoration of passenger rail service between Brunswick and Rockland. The study considers pedestrian and bicycle facilities and other multimodal services. Finally, the study considers the benefits to Route 1 that would be achieved if a new State Route 209 (Route 209) Spur were implemented between Route 1 and the south end of the City of Bath, in the vicinity of Castine Ave. and Spring St., near Bath Iron Works' south gate.

According to the MaineDOT Bridge Maintenance Division, the Route 1 viaduct is nearing the end of its structural life. Interim repairs to extend the life of the viaduct are being investigated by MaineDOT. However, the viaduct will need to undergo major rehabilitation or replacement within the next 10-15 years. Hence, the No-Build Option is not a prudent and feasible long-term option for the viaduct.

The City of Bath and Route 1 is the gateway to the Mid-Coast region of Maine. Route 1 is part of the National Highway System, and, as such provides important regional mobility as well as local accessibility in the Mid-Coast region. High traffic volumes on Route 1 and on local roads in the corridor, combined with the layout of these local roads and the existing rail line, are creating increased congestion.

The Bath Feasibility Study also examined land use considerations and urban design improvements to the Route 1 corridor. The study was conducted with a Context Sensitive Design approach to consider the goals and objectives of the City of Bath and its residents along with the existing natural and man-made setting of the transportation corridor, to develop prudent and feasible options that will be compatible with the goals and objectives of the community.

Supporting technical documentation to this Bath Feasibility Study report is contained in three Compendiums of Technical Memoranda. A complete listing of these Technical Memoranda can be found in Appendix A.

- Compendium of Transportation and Engineering Technical Memoranda
- Compendium of Social and Economic Technical Memoranda
- Compendium of Natural Resources Technical Memoranda

1.1 Study Areas

The Bath Feasibility Study focused on two study areas, the Highway Study Area and the Rail Study Area. The Highway Study Area defined the extent of study for the Route 1 and Route 209 Spur options, while the Rail Study Area defined the limits of study for rail options.

Highway Study Area

The Highway Study Area is illustrated on Figure 1, page 3 and is defined by the Whiskeag Creek on the west, Congress Avenue and North Street on the north, the Kennebec River on the east, and Pine Street (extended to Whiskeag Creek) on the south.

The Highway Study Area was further focused to two study corridors, the Route 1 Study Corridor and the Route 209 Spur Study Corridor.

Rail Study Area

The Rail Study Area is illustrated on Figure 2, page 4 and is defined by the New Meadows River on the west, north along the existing Rockland Branch Railroad line to the Kennebec River on the east, and by Pine Street (extended to New Meadows River) on the south.

Route 1 Study Corridor

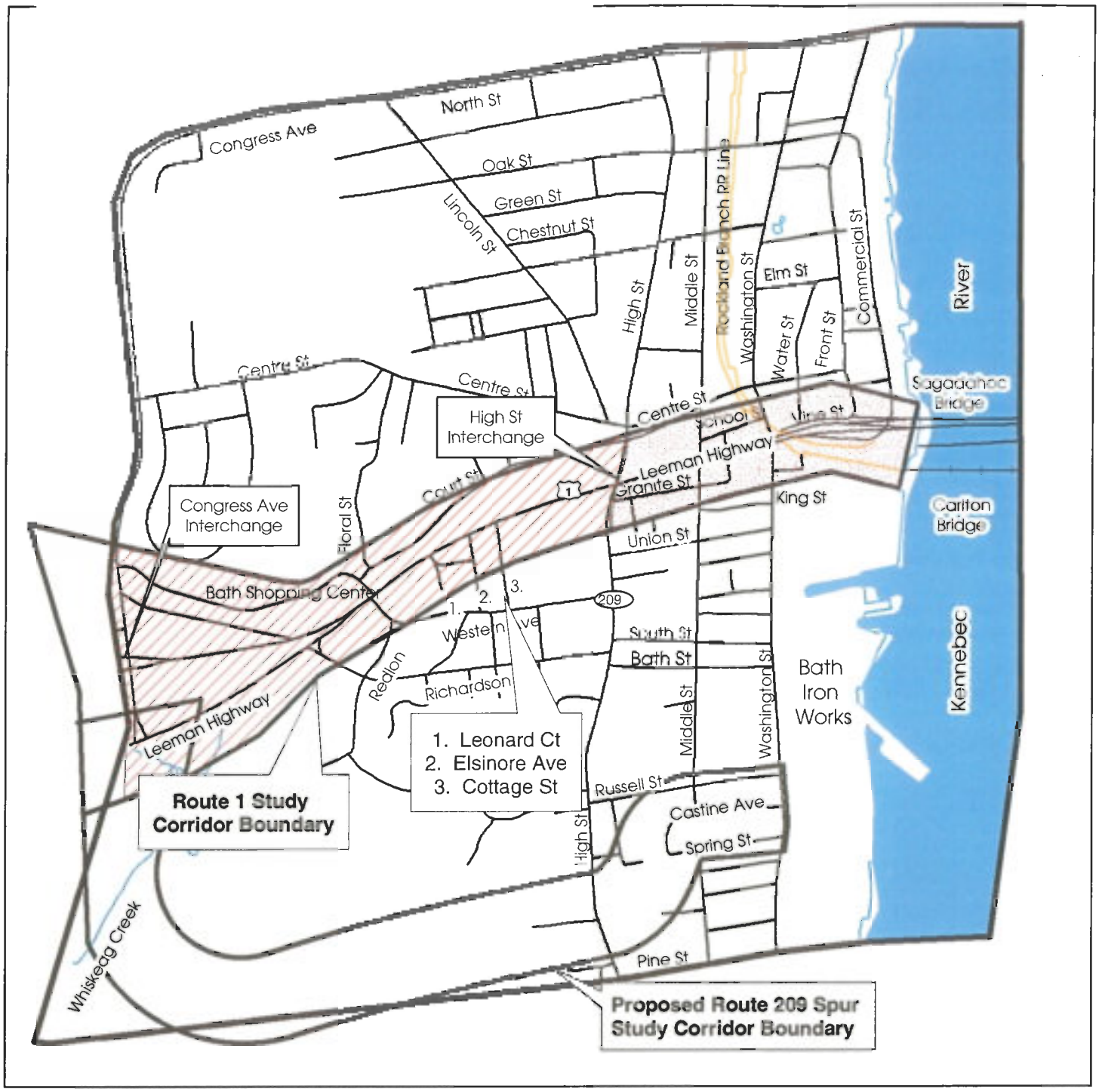
The Route 1 Study Corridor begins just west of the Congress Avenue Interchange and extends east to the Sagadahoc Bridge. A 500 foot wide corridor within the immediate area of Route 1 was studied for the entire length of the corridor. Figure 1, page 3 depicts the Route 1 Study Corridor. The Route 1 Study Corridor consists of two zones (not municipal zoning areas, which are shown on Figure 8, page 19) with distinct roadway characteristics and adjacent land uses. The westerly section, referred to throughout this report as the "Commercial Zone" because the adjacent land uses are primarily commercial, begins at the Congress Avenue Interchange and extends east to the High Street Interchange. The easterly section, referred to throughout this report as the "Downtown Zone" because it is adjacent to Bath's downtown, begins at the High Street Interchange and extends east to the Sagadahoc Bridge.

Route 209 Spur Study Corridor

The Route 209 Spur Study Corridor was the focus of a study conducted for the Maine Department of Transportation in 1995. The purpose of the Route 209 Spur is to connect Route 1 near the Congress Avenue Interchange, with Route 209 at a location south of Bath Iron Works (BIW), with the aim to alleviate BIW traffic through Downtown Bath. The proposed spur would result in the creation of a new roadway facility that allows Route 209 traffic to bypass a portion of Route 1 and the Downtown area in Bath. A 500 foot wide corridor was studied for the entire length of the Route 209 Spur. Figure 1, page 3 depicts the Route 209 Spur Study Corridor.

1.2 Public Participation

Public participation for the Bath Feasibility Study was initiated early in the study through the establishment of a Steering Committee. The Steering Committee was comprised of members of the community, representing homeowners, business owners, and elected officials. The role of the Steering Committee was to provide input to the Study Team and facilitate communication of public comments and concerns into the development of the study goals and objectives, the Feasibility Study Purpose Statement, and



Roadways

Commercial Zone

Study Area

Downtown Zone

Bath Feasibility Study

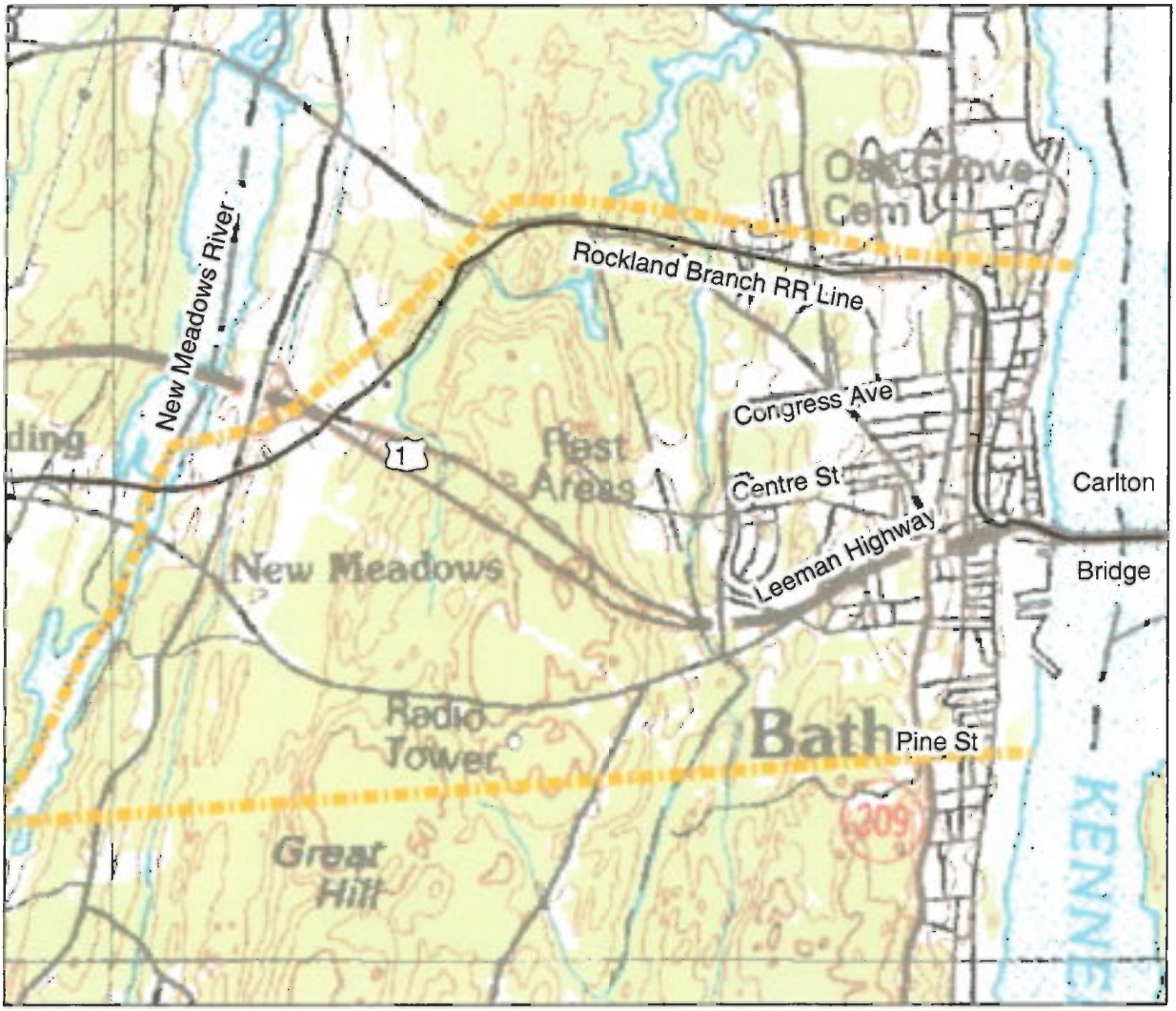
Maine DOT PIN 10123.00

Highway Study Area

Feet

0 250 500 1,000 1,500 2,000

Figure 1



Study Area

Bath Feasibility Study
Maine DOT PIN 10123.00
Rail Study Area

Not to Scale

Figure 2

development and evaluation of options. A total of six Steering Committee meetings were held over the course of the study. These meetings were conducted as working sessions, in which the Study Team presented material for review to the Steering Committee, and the Steering Committee was asked to comment and provide input.

An initial meeting of the Steering Committee was held May 22, 2003 to establish organizational ground rules and the study framework. In addition, the Steering Committee discussed and established issues and goals for the study.

The second Steering Committee meeting was held July 17, 2003 at which the draft Feasibility Study Purpose Statement was developed. Conceptual Route 1 and Route 209 Spur options were presented along with baseline conditions for Community Facilities, Zoning, and Natural Resources.

The third Steering Committee meeting was held August 14, 2003. The revised Bath Feasibility Study Purpose Statement was presented, along with a further examination of the conceptual options for Route 1.

The fourth Steering Committee meeting was held September 30, 2003. Existing and future No Build traffic conditions were presented, along with the traffic analysis of the Route 209 Spur, the concept alignments for the railroad options, and evaluation matrices for the Route 1 options and railroad options.

The fifth Steering Committee meeting was held October 28, 2003. The items discussed at this meeting included a traffic data update, right-of-way costs for railroad options, and follow-up discussions for the various options.

The sixth and final Steering Committee meeting was held April 13, 2005 to review the draft Bath Feasibility Study report and to provide input into study recommendations.

A study website was developed (www.bathroute1study.com) in which Steering Committee notes and study activities were regularly updated. The purpose of the study website was to disseminate study information to a wide audience and to provide a medium for public input.

In addition, three public meetings were held during the study. A public goal-setting workshop was held June 23, 2003 to gather the goals, concerns, and potential issues as perceived by the public regarding the Route 1 corridor, Route 209 Spur, and railroad corridor. The public workshop focused on the following two topic areas: Transportation Goals and Concerns, and Land Use/Community Characteristics/Environmental Goals and Concerns. A summary of this workshop was placed on the study website. The goals and concerns expressed at the workshop helped to formulate the Feasibility Study Purpose Statement. On June 2, 2005, a second public information meeting was held to present the findings of the Draft Bath Feasibility Study Report and to accept public input. On July 6, 2005, the Study Team presented the findings of the draft report to the Bath City Council and accepted comment and input from the City Council.

1.3 Feasibility Study Purpose Statement

Together with the Steering Committee, the Study Team formulated the Feasibility Study Purpose Statement. It reads as follows:

The Feasibility Study Purpose is to define a Transportation Master Plan for the U.S. Route 1 Corridor in Bath that improves and balances local accessibility and regional mobility and addresses current and future congestion. Improvement recommendations will address aesthetic and safety concerns associated with inadequate and aging infrastructure in a manner that is sensitive to community objectives with respect to land use, cultural and historic preservation, economic vitality, and livability along the U.S. Route 1 Corridor. The outcome will reinforce the U.S. Route 1 Corridor as the Gateway to Bath and Mid-Coast Maine as part of a safe and efficient transportation system that satisfies regional travel and local accessibility needs. Improvement recommendations of the Transportation Master Plan may include highway, rail, bicycle and pedestrian modes as appropriate.

The Feasibility Study Purpose Statement was developed to guide the development and evaluation of improvement options for the study corridors. Each option was evaluated against the Feasibility Study Purpose Statement.

The need to conduct the Bath Feasibility Study is based on the fact that the Route 1 viaduct is nearing the end of its structural life. Interim repairs to extend the life of the viaduct are being investigated by MaineDOT. However, the viaduct will need to undergo major rehabilitation or replacement within the next 10-15 years.

Chapter 2: Existing Conditions

2.1 Introduction

This chapter presents the baseline information on the existing transportation, physical, natural and social environment for the Route 1 Study Corridor and the Route 209 Spur Study Corridor. The natural resources, land use and zoning, community facilities, noise components, property and utilities, and hazardous waste components are described within the limits of the Route 1 Study Corridor and the Route 209 Spur Corridor Study. Additional information on these resources and on resources within the broader Study Area is documented in the three Compendiums of Technical Memoranda.

2.2 Existing Transportation Conditions

The following sections will document the existing transportation system in the Study Area. Additional information is documented in the Bath Feasibility Study Compendium of Transportation and Engineering Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda is included in Appendix A of this report.

2.2.1. Existing Roadway Network

The primary roadway in the City of Bath and the Study Area is U.S. Route 1 (Route 1), which runs in an east-west direction through the middle of the City of Bath. The northern and southern halves of the City of Bath are linked by four primary north-south roadways (see Figure 1, page 3).

- **Congress Ave.** is located about one mile west of the downtown area, and serves primarily as an access road to Route 1 and to the Bath Shopping Center.
- **High St.** (State Route 209) carries the highest traffic volumes of north-south roadways. It connects the City of Bath with Phippsburg and other coastal communities to the south including Popham Beach, Sebasco Estates, South Point, and West Point.
- **Middle St.** carries the lowest volumes of the four north-south roadways. It runs through a residential neighborhood south of the viaduct between High St. and Washington St.
- **Washington St.** runs parallel to the Kennebec River on the east side of the City of Bath. It provides access to and serves as a connector to Bath Iron Works (BIW), the Maine Maritime Museum, the South End Boat Launch, and residences to the south.

The majority of traffic uses Route 1 through the City of Bath and the Study Area. However, there are four local roads that support east-west travel within the Study Area. These roads are described below:

- **Leeman Hwy.** runs directly under/adjacent to the viaduct in parts, thus serving as a frontage road for Route 1. It begins west of Congress Avenue and extends eastward to the Sagadahoc Bridge.
- **Richardson St.** originates east of Congress Ave. and extends to High St. This road is frequented by commuters from west of the City of Bath seeking a local connection to BIW and points south of the City of Bath including Popham Beach, Morse Mountain, Hermit Island, and Sebasco Estates.

- **Court St.** begins at Floral St. and runs eastward to High St., where it merges with Centre St. This road provides local access to the Bath Shopping Center area.
- **Centre St.** is the northernmost roadway. The longest of the east-west roadways, Centre St. begins just west of Congress Ave. and extends eastward to Front Street.

Route 1 in the Commercial Zone is a four-lane facility with two-lanes in each direction, separated by a narrow median with guardrail and a chain link fence. The travel lanes appear adequate in width (approximately 12-ft.) but the existing shoulders are substandard. No sidewalks are present within this section of Route 1.

Access to Route 1 is provided at numerous roadways in the Commercial Zone. From west to east, access to Route 1 northbound is available from Leeman Highway, Western Avenue, Leonard Court, Elsinore Avenue, and Cottage Street. Access to Route 1 southbound is available from High Street and at the Bath Shopping Center entrance near Court Street. Egress from Route 1 northbound is provided to Leeman Highway, Western Avenue, and High Street. Egress from Route 1 southbound is provided to Bath Shopping Center entrance and Congress Avenue. Access to commercial property along this section of Route 1 is mostly uncontrolled. There are multiple or extra wide entrances at many of the properties. This section of Route 1 does not meet current MaineDOT Access Management Standards (2002).

Route 1 in the Downtown Zone between High Street and the Kennebec River is a two-lane facility with one-lane in each direction, elevated from the local roads on an existing viaduct, known as the Bath Viaduct. The existing Bath Viaduct begins east of High Street and continues to the Kennebec River where it connects to the Sagadahoc Bridge. The travel lanes on the Bath Viaduct are undivided and appear adequate in width (approximately 12-ft.) but the existing shoulders are substandard. No sidewalks are present within this section of Route 1.

An existing local street network underneath the Route 1 viaduct allows traffic circulation within the City, to BIW and Route 1. Leeman Highway, consisting of one-way frontage roads, is located parallel to and underneath the Route 1 viaduct. Five local streets link north and south Bath, including High Street (overpass of Route 1), Middle Street, Washington Street, and Water Street/King Street (all under the Route 1 viaduct), and Commercial Street (under the Sagadahoc Bridge).

Access to Route 1 northbound is available from Leeman Highway at Water Street/King Street. Access to Route 1 southbound is provided from High Street and from Leeman Highway. Northbound egress from Route 1 is provided to High Street and Leeman Highway. Southbound egress from Route 1 is provided at Vine Street and Front Street. There are no intermediate access or egress points to Route 1 along the viaduct. Access to abutting properties is provided along Leeman Highway.

2.2.2. Existing Traffic Volumes

There are two primary contributors to traffic flow in and through the City of Bath. The first contributor is Bath Iron Works (BIW). With current employment of about 7,000 people (2003), BIW is by far the dominant employer in the region. Traffic volumes in the

vicinity of BIW surges during the periods just prior to the start of the first shift (i.e. 6:30-7:00am) and just after the end of the first shift (i.e. 3:30-4:00pm).

The second contributor to regional traffic is summer tourism traffic. Route 1 is a gateway route to Mid-Coast Maine and its various vacation destinations, such as Boothbay Harbor, Camden, and Bar Harbor. State Route 209 (SR-209 or High St.) also serves vacation destinations, connecting Route 1 to tourist-related destinations south of the City of Bath, including Phippsburg, Popham Beach State Park, Hermit Island, and Sebasco Estates.

Existing traffic data was collected in the Route 1 Study Corridor for the AM and PM peak periods and for the daily time period. The analysis of these data was focused on the summer PM peak hour because the PM peak hour traffic is generally up to 70% higher than the AM peak hour traffic. This phenomenon is largely due to the overlap of recreational and worker trips during the PM peak hour.

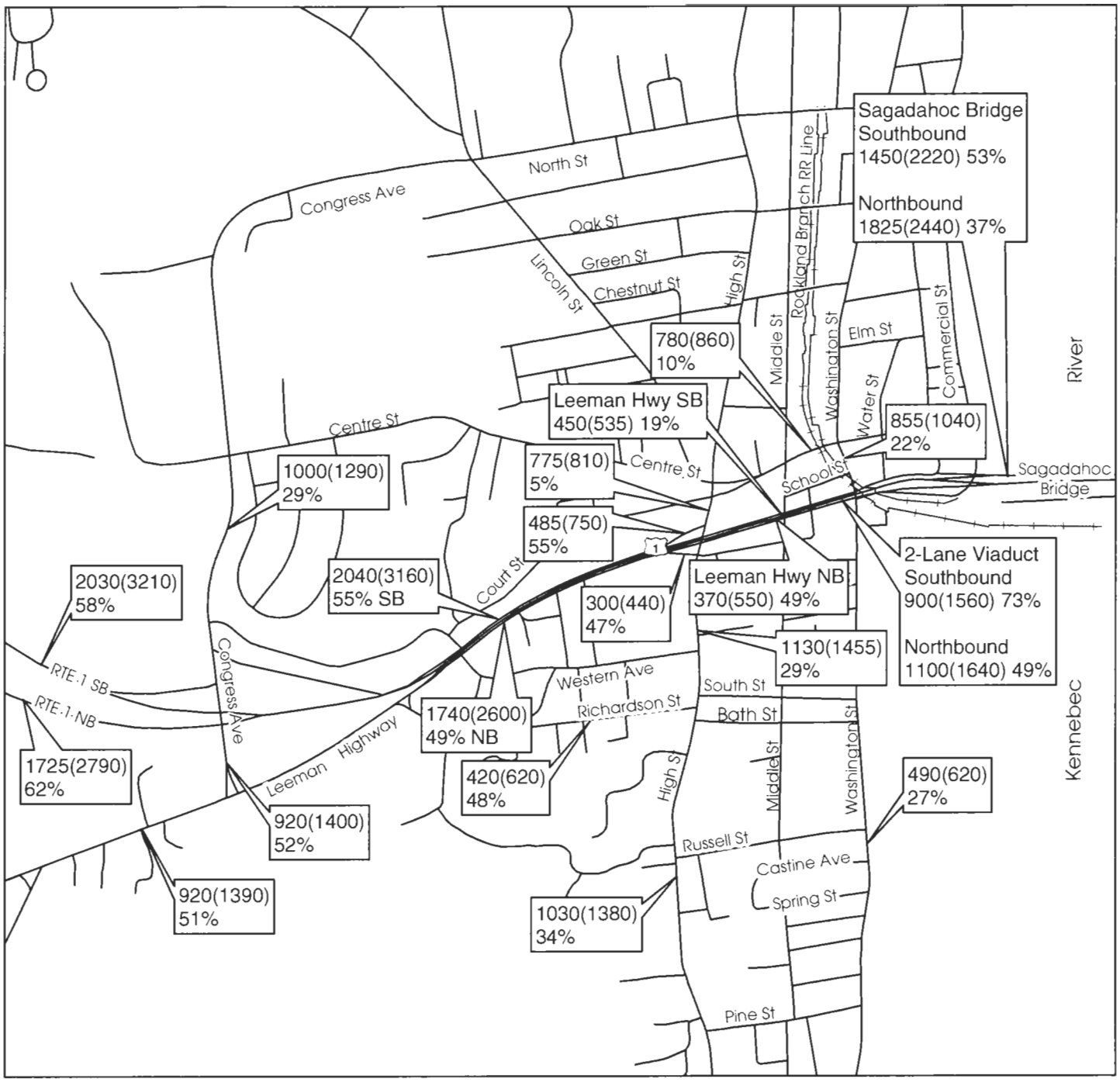
Existing and Future Summer PM peak hour traffic volumes are illustrated on Figure 3, page 10. Traffic volumes on the primary roadways are generally low to moderate in magnitude with the exception of Route 1, the Sagadahoc Bridge, Leeman Highway, High Street, Washington Street north of Route 1 and Centre Street.

- 2003 two-way volumes on Route 1 west of the Congress Avenue interchange total 3,755 vehicles per hour (vph);
- 2003 two-way volumes on Route 1 near Court Street total 3,780 vph;
- 2003 two-way volumes on the Route 1 viaduct approaching the Sagadahoc Bridge total 2,000 vph;
- 2003 two-way volumes on the Sagadahoc Bridge total 3,275 vph;
- 2003 one-way volume on the High Street off-ramp from Route 1 northbound has a PM peak hour volume of 300 vph;
- 2003 one-way volume on the High Street on-ramp to Route 1 southbound carries 485 vph.
- 2003 two-way volume on Leeman Highway adjacent to the Route 1 viaduct totals 820 vph;
- 2003 two-way volume on Richardson Street totals 420 vph;
- 2003 two-way volume on High Street totals 1,130 vph south of Route 1 and 775 vph north of Route 1;
- 2003 two-way volume on Washington Street totals 490 vph south of Russell Street and 855 vph north of Route 1;
- 2003 two-way volume on Centre Street, near Middle Street totals 780 vph.

2.2.3. Pedestrian/Bicycle System

There are generally sidewalks on both sides of most City of Bath streets in the Study Area. There are no sidewalks along Route 1 in the Study Area except on the Sagadahoc Bridge. Sidewalks exist on limited portions of Leeman Highway: from Franklin Street to Washington Street on the eastbound side; and, for a short distance on the westbound side from Washington Street westerly toward Middle Street.

The Bath Waterfront/Downtown Action Plan envisions a revitalized downtown Bath with renewed emphasis on the pedestrian orientation of all development and redevelopment.



LEGEND

xxx - 2003
(xxx) - 2030
xx% - % Increase

Bath Feasibility Study
Maine DOT PIN 10123.00

Existing 2003 & Future No-Build 2030 Summer PM Peak Hour Volumes

Ft
0 375 750 1,500 2,250 3,000

Figure 3

Particular emphasis is placed on stronger pedestrian access downtown across the Route 1 corridor from the north and south.

Pedestrian counts were conducted during the AM and PM peak hours at several locations in the eastern section of the Route 1 Study Area. As illustrated in Table 1, there are moderate to heavy north-south pedestrian flows under the viaduct during periods of shift changes at BIW. For the most part, these crossings occur mid-block in the area of Water Street and Washington Street. There also is a moderate amount of pedestrian activity on High Street during the PM peak.

Table 1 –Summary of Pedestrian Counts

Location	AM Peak		PM Peak	
	Time	Total Peds	Time	Total Peds
High St. @ US-1 WB On-Ramp	7:15-8:15	6	3:00-4:00	28
High St. @ US-1 EB Off-Ramp	7:30-8:30	3	4:30-5:30	33
Leeman Hwy @ Washington St.	6:30-7:30	25	3:30-4:30	93
Leeman Hwy @ Middle St.	6:30-7:30	13	4:30-5:30	13
Leeman Hwy @ Water St.	6:30-7:30	70	3:30-4:30	62

Bicycles are prohibited on Route 1 from Brunswick to Bath up to the Sagadahoc Bridge. Bicycles are allowed on the paved shoulders of the bridge. Bicycle access to and from the Sagadahoc Bridge is via the Leeman Highway on-ramp and the Front Street off-ramp. Pedestrian and bicycle access to the sidewalk on the southerly side of the Sagadahoc Bridge is provided via steps and an accessible pedestrian ramp to street grade in the vicinity of the Bath Train Station.

Within the State of Maine, the on-road route of the East Coast Greenway travels from Brunswick to Bath using the following route: Androscoggin River Pathway, Old Bath Road (in Brunswick), Old Brunswick Road, which are outside of the Study Area, to North Street, Commercial Street to the Sagadahoc Bridge, which are in the Study Area. MaineDOT is investigating routes to provide a long term route for the East Coast Greenway and to extend the Androscoggin River Pathway to connect Brunswick, West Bath, and Bath (East Coast Greenway On-road Bicycle Route (2000), MaineDOT). One possible route would parallel the north side of southbound Route 1 from the current terminus of the Androscoggin River Pathway to the Congress Avenue interchange. Additional pathway would continue along Congress Avenue just beyond the Bath Shopping Center drive where the facility would transition to an on-road facility to North Street to Commercial Street to the Sagadahoc Bridge.

2.2.4. Rail Service

There is currently no passenger rail service in the Study Area. The Explore Maine initiative of the MaineDOT envisions a statewide passenger rail system (and other complementary transportation networks such as passenger ferry, intercity bus, and shared use paths) to be implemented over a 20 plus year time frame. Highest priority service would commence in areas that might impact (through direct rail service or connecting intercity bus service) the Route 1 corridor through Bath (service from Portland to Brunswick, Brunswick to Rockland, and Portland to Lewiston-Auburn).

Downeaster/Amtrak service from Boston to Portland commenced in December 2001. NEPA (National Environmental Policy Act) documentation is being prepared for the proposed extension of the Amtrak passenger rail service to Brunswick. Anticipated commencement of service is 2008, at the earliest.

The Rockland Branch rail line extends from Brunswick to Rockland through Bath and is owned by the State of Maine. The state has recently invested funds to rehabilitate/repair/upgrade the tracks, bridges and grade crossings. Additional investment in passenger rail stations is planned. Currently, excursion/tourist trains operate on the rail line along with a freight carrier (Maine Eastern Railroad).

2.3 Natural Resources

Additional natural resources information is documented in the Bath Feasibility Study Compendium of Natural Resources Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.3.1. Route 1 Study Corridor

Due to the urban and built-up nature of the Route 1 Study Corridor, the presence of natural resources is limited. Natural resources found within the Route 1 Study Corridor are depicted on Figure 4, page 13.

Wetlands exist in the western end of the Route 1 Study Corridor, adjacent to Whiskeag Creek. These include Palustrine Emergent (PEM) wetlands and Palustrine Forested (PFO) wetlands. There are approximately 1.9 acres of PEM wetlands and 0.8 acres of PFO wetlands in the Route 1 Study Corridor.

Surface water resources within this area include Whiskeag Creek, located in the western end of the Route 1 Study Corridor. In addition, the Kennebec River is located immediately east of the Route 1 Study Corridor.

There are no public wells located within the Route 1 Study Corridor.

There are no federally-listed wildlife species known to occur in the Route 1 Study Corridor, with the exception of occasional, transient bald eagles (*Haliaeetus leucephalus*). "Occasional, transient" refers to birds which are only known to pass through a location rather than a nesting species. There are no records of state-listed botanical features in the Route 1 Study Corridor.

Based on the urban and developed character of the Route 1 Study Corridor, the overall availability of wildlife habitat is minimal. Wildlife habitats associated with wetlands and the Whiskeag Creek exist at the western fringe of the Route 1 Study Corridor.

At its western edge, a small portion of the Route 1 Study Corridor is located within the 100-year floodplain of the Whiskeag Creek. Portions of the eastern end of the Route 1 Study Corridor are located within the 100-year floodplain of the Kennebec River, generally from approximately Washington Street east to the Kennebec River.

Wetlands

- Palustrine Emergent Vegetation
- Palustrine Forested Vegetation
- 100 Year Floodplain

Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00

Natural Resources
Route 1 Study Corridor

BATH

Feet
0 250 500 1,000

Figure 4

In summary, the natural resources located within the Route 1 Study Corridor present a low level of constraint to roadway development and reconstruction.

2.3.2. Route 209 Spur Study Corridor

The Route 209 Spur Study Corridor is located in a less built-up environment than the Route 1 Study Corridor. As a result, natural resources are more prevalent in this part of the Study Area.

As shown in Figure 5, page 15, the Route 209 Spur Corridor contains 2.9 acres of Palustrine Emergent wetland, 0.8 acres of Palustrine Scrub Shrub wetlands, and 0.9 acres of Palustrine Forested wetlands.

Surface water resources within this corridor include a segment of the Whiskeag Creek at the western end of the corridor, and the Kennebec River at the eastern end of the corridor. There are no public wells located within the Route 209 Spur Study Corridor.

There are no federally-listed wildlife species known to occur in the Route 209 Spur Study Corridor, nor are there any records of state-listed botanical features within this corridor.

The Route 209 Spur Study Corridor traverses a largely undeveloped area from Whiskeag Creek to High Street. Approximately 40 acres of unfragmented habitat exists in this corridor. Wildlife habitats associated with wetlands and the Whiskeag Creek exist at the western fringe of the Route 209 Spur Study Corridor.

At its western edge, a small portion of the Route 209 Spur Study Corridor lies within the 100-year floodplain of the Whiskeag Creek. Portions of the eastern end of the corridor are located within the 100-year floodplain of the Kennebec River, generally from Middle Street east to the Kennebec River.

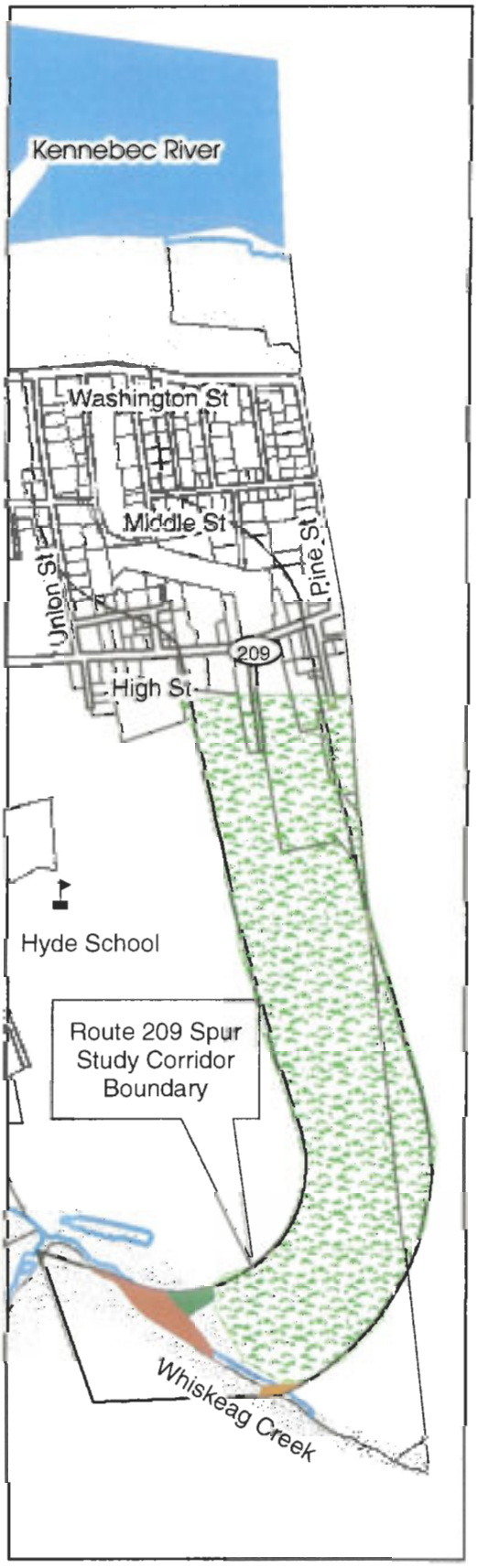
In summary, the natural resources located within the Route 209 Spur Study Corridor present a low to moderate level of constraint to roadway construction. Fragmentation of existing wildlife habitat may occur along portions of this corridor if the Route 209 Spur were constructed in this corridor.

2.4 Noise

Additional information on noise sensitive receptors is documented in the Bath Feasibility Study Compendium of Social and Economic Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.4.1. Route 1 Study Corridor

Sensitive noise receptors, as defined by the Federal Highway Administration Traffic Noise Analysis and Abatement Policy and Guidance document, include residences, schools, parks, churches, nursing homes, hospitals and libraries. Sensitive noise receptors located within the Route 1 Study Corridor are shown on Figure 6, page 16 and include 58 single family residential structures and 19 multi-family residential structures. In addition, one place of worship is located within the Route 1 Study Corridor.



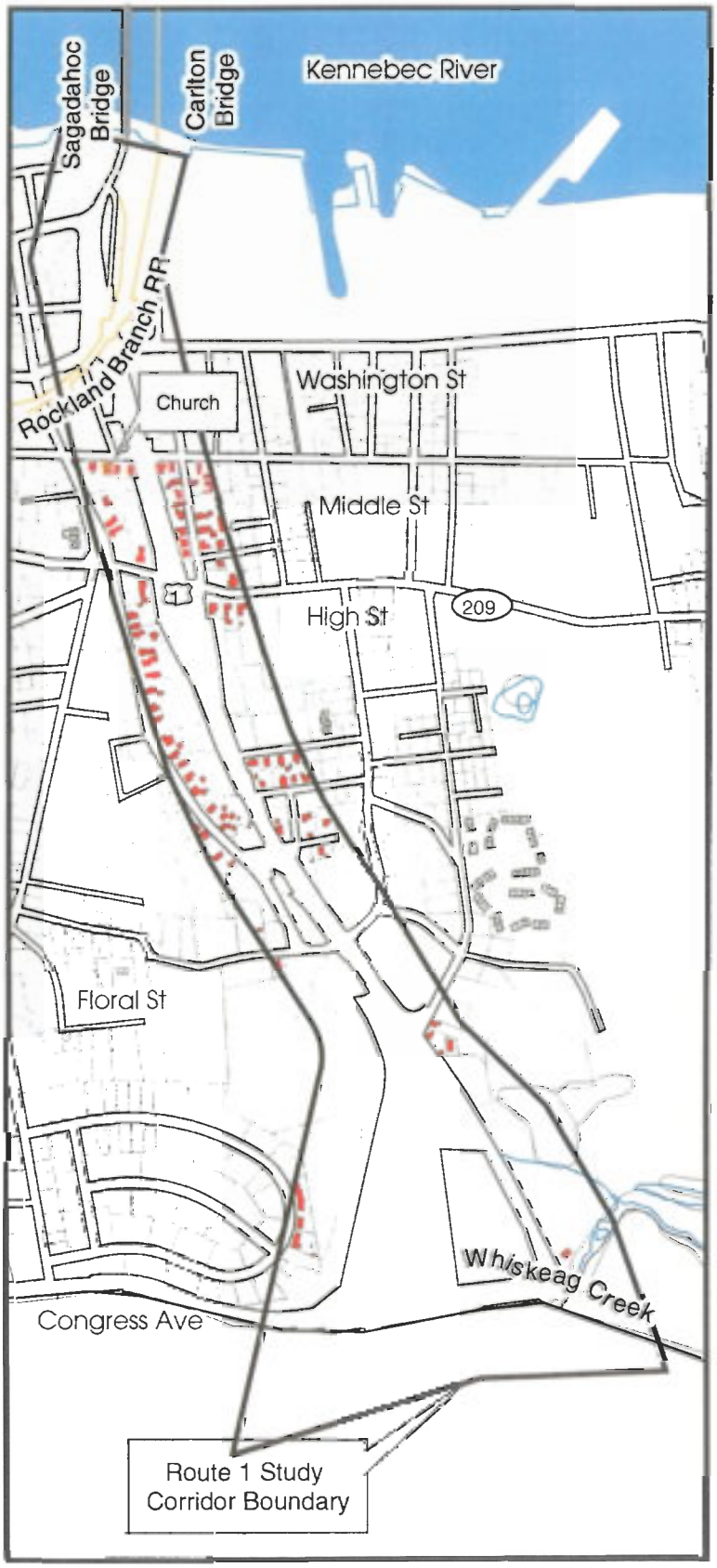
Wetlands

- Palustrine Emergent Vegetation
- Palustrine Forested Vegetation
- Palustrine Scrub Shrub
- Unfragmented Habitat
- 100 Year Floodplain
- Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00
Natural Resources
Route 209 Spur
Study Corridor

Feet
0 250 500 1,000

Figure 5



Single/Multi Family Residences

Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00
Sensitive Noise Receptors
Route 1 Study Corridor

Feet
0 250 500 1,000

Figure 6

2.4.2. Route 209 Spur Study Corridor

The Route 209 Spur Study Corridor contains 49 single family residential structures and 13 multi-family residential structures. These structures are shown on Figure 7, page 18.

Due to the presence of sensitive noise receptors, future studies of potential transportation improvements in the Route 1 and Route 209 Spur Study Corridors may need to include a noise impact analysis.

2.5 Land Use, Historic, and Socioeconomic Environment

Additional information on the land use, historic, and socioeconomic environment is documented in the Bath Feasibility Study Compendium of Social and Economic Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.5.1. Route 1 Study Corridor

Land uses within the Route 1 Study Corridor consist of residential, commercial, and industrial uses. Commercial uses include a hotel, service stations, fast food restaurants, restaurants, banks, and shopping plazas. Residential uses include single and multi-family dwellings. Bath Iron Works is the only industrial land use in the Route 1 Study Corridor. Land Uses within the Town of West Bath include business and commercial land uses.

There are two future development proposals within the Route 1 Study Corridor, as depicted on Figure 8, page 19. The first is the Finast Properties, LLC Lot. This property is located within the Route 1 Study Corridor between Leeman Highway and Congress Avenue. It is currently owned by Finast Properties, LLC and functions as administrative offices for Bath Iron Works. It is approximately 4.4 acres in size. A pre-application workshop was held in the Spring of 2003 in which a proposal was made to change the office type of land use of this parcel to commercial use. A proposal for an auto repair business and a drive through fast food restaurant has been proposed. In addition, the proposal included plans for a bank to be located on this parcel.

Another property located within the Route 1 Study Corridor is the C.N. Brown property. This property is located on Route 1 northbound at Western Avenue. It is approximately two acres in size. This parcel is currently being redeveloped from its former use as a car dealership. Plans for this parcel include a multi-pump gas station with convenience store and car wash, operated by C.N. Brown.

Zoning within the Route 1 Study Corridor includes five districts in the City of Bath, plus one district in the Town of West Bath, as shown in Figure 8, page 19. Zoning along Route 1 in the Town of West Bath is designated Business and Commercial. This zone is under the Shoreland Overlay Zone, which applies to all land areas within 250 feet of the normal high-water line and requires a 75 foot shore setback, with a minimum shore frontage of 150 feet. The Town of West Bath describes this zone as follows:

Single/Multi Family Residences

Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00
Sensitive Noise Receptors
Route 209 Spur
Study Corridor

Feet
0 250 500 1,000

Figure 7

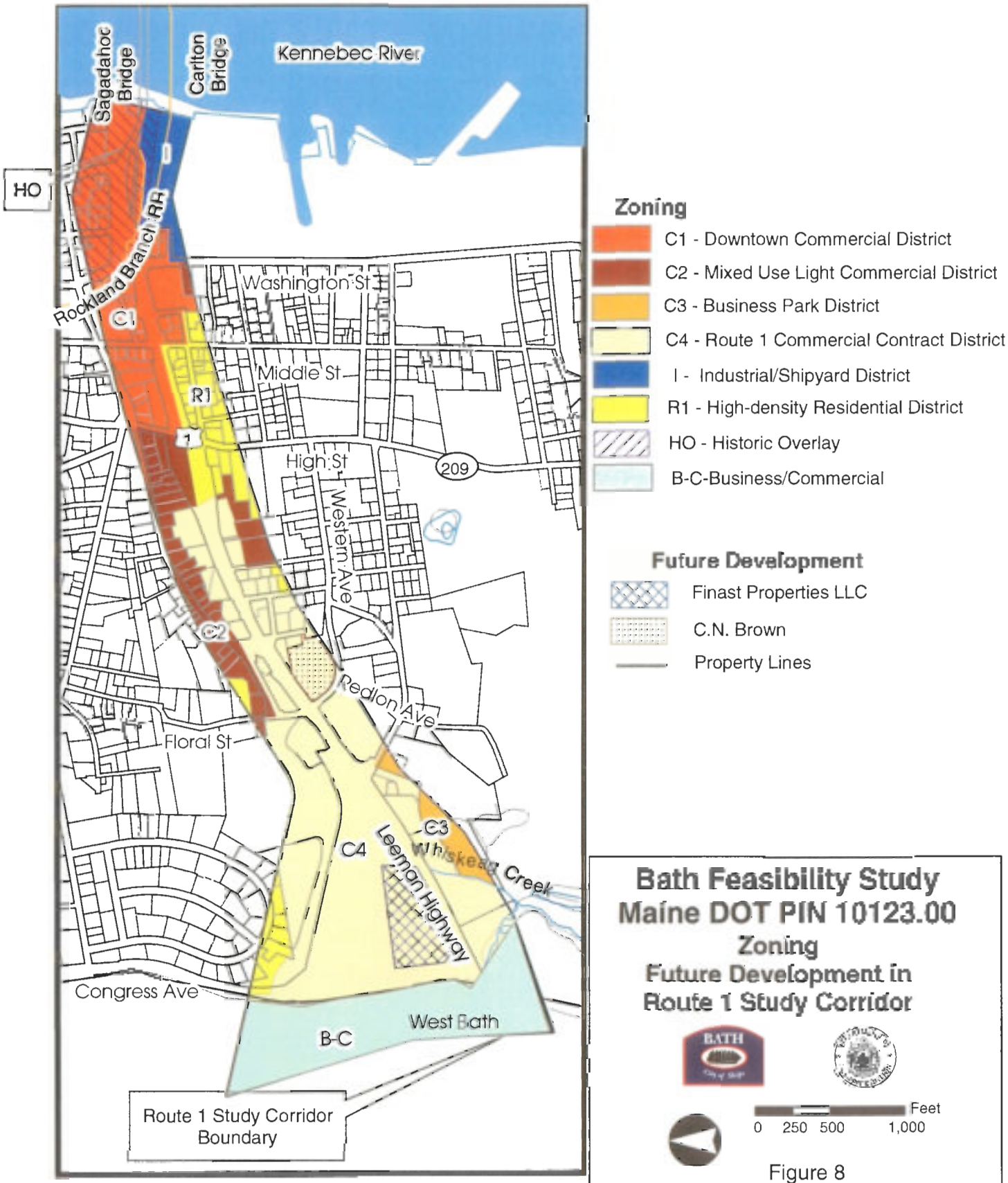

Kennebec River
Sagadahoc Bridge
Carlton Bridge
HO
Rockland Branch RR
C1
Washington St
Middle St
R1
1
High St
209
Western Ave
C2
Redlon Ave
Floral St
C3
C4
Leeman Highway
Whiskeag Creek
Congress Ave
West Bath
B-C
Route 1 Study Corridor Boundary
Zoning
C1 - Downtown Commercial District
C2 - Mixed Use Light Commercial District
C3 - Business Park District
C4 - Route 1 Commercial Contract District
I - Industrial/Shipyard District
R1 - High-density Residential District
HO - Historic Overlay
B-C-Business/Commercial
Future Development
Finast Properties LLC
C.N. Brown
Property Lines
Bath Feasibility Study
Maine DOT PIN 10123.00
Zoning
Future Development in
Route 1 Study Corridor
BATH
Feet
0 250 500 1,000

Figure 8

B-C--Business Commercial (West Bath)--The Business and Commercial district provides an area that allows professional businesses; including medical and office uses, laboratories, retail businesses, service businesses such as dry cleaners, beauty parlors, copy/printing shops, veterinary establishments, restaurants, and gas stations. A limited amount of housing is allowed in this district.

The zoning districts found within the City of Bath along the Route 1 Study Corridor include the C1, C2, C3, C4, I, R1, and HO zoning districts. The City of Bath describes these zoning districts as follows:

C1--Downtown Commercial District. This district provides a location for retail, business, and tourism oriented activities of Bath. The Downtown Commercial District allows for some residential activity, which has historically been part of the downtown.

C2--Mixed Use Light Commercial District. This district includes a mix of high-density residential and small-scale business activities that are oriented primarily to neighborhood goods and services. The intent of the C2 zoning district is to accommodate a mix of uses, both residential and commercial, at neighborhood scales.

C3--Business Park District—The Business Park District provides an area that will encourage office, warehousing, high technology, communication, light industrial, research and development, marine-related construction, communications, and similar land uses. Currently, this area exists mainly as open space, which includes part of the recreational fields at the Hyde School. However, there are no plans to convert the recreational fields at the Hyde School into Business Park Development. There is also a small amount of manufacturing-related land use in this district.

C4--Route 1 Commercial Contract District. This district allows for highway-oriented, commercial development. In addition, the goal of this district is to improve highway safety through recommending design strategies.

I--Industrial/Shipyard District. The Industrial/Shipyard District provides the location for the main facilities of the Bath Iron Works (BIW) and for support facilities. This is an industrial district that must serve industrial needs, while also controlling impacts on surrounding residential and commercial neighborhoods.

R1—High-Density Residential District. The High-Density Residential District provides for the maintenance and increased livability of the existing densely built-up areas of the City of Bath, and areas where a limited amount of high-density housing can be constructed. The high-density residential district provides areas of compact development that foster cohesive neighborhoods close to community services.

HO—Historic Overlay District. The purpose of the Historic Overlay District is to provide for the review of certain activities within this historic part of the City of Bath in order to prevent inappropriate alterations of buildings of historic or architectural value, to preserve the essential character of historic neighborhoods, and to ensure that new buildings or structures constructed in areas of architectural or historic

significance are designed and built in a manner compatible with the character of the neighborhood.

2.5.2. Route 209 Spur Study Corridor

The primary zoning district located within the Route 209 Spur Study Corridor is C3, which allows for business park developments. Other zoning districts within the Route 209 Spur Study Corridor are C2, I, R1, and B-C (see Figure 9, page 22).

2.6 Community Characteristics, Facilities and Services

Additional information on community characteristics, facilities, and services is documented in the Bath Feasibility Study Compendium of Social and Economic Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.6.1. Route 1 Study Corridor

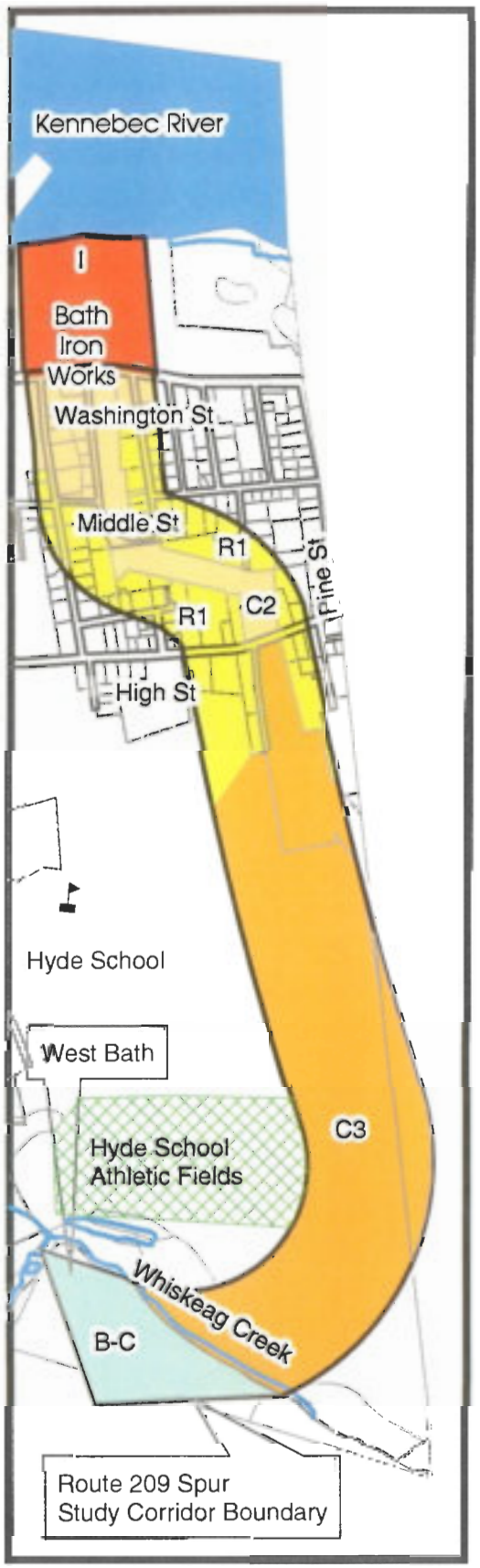
There is one community facility located within the Route 1 Study Corridor. It is the United States Post Office facility on Washington Street (see Figure 10, page 23).

One of the strengths of the City of Bath is in the integrity of its neighborhoods. There are a number of neighborhoods that are located within or adjacent to the Route 1 Study Corridor. One is the Floral Street neighborhood. The Floral Street neighborhood is characterized by small lots. This neighborhood is undergoing some economic difficulties, and has been struggling in recent years. Some homes are in need of repair. This neighborhood has demonstrated community cohesion in recent years when faced with development proposals that would create traffic issues within their neighborhood. Residents also share a common interest in minimizing through traffic on their neighborhood streets.

Other neighborhoods found within or adjacent to the Route 1 Study Corridor are the Richardson St., Western Avenue, and Redlon Rd. neighborhoods. These neighborhoods contain densely developed single family homes and condominiums. These neighborhoods experience large amounts of cut-through traffic mainly by local traffic looking to by-pass Route 1 congestion. These neighborhoods have demonstrated a strong cohesive character by coming together to represent themselves against various development proposals over the past few years. Most recently, residents banded together when a large-scale grocery store was proposed, which would have increased traffic on their neighborhood streets.

2.6.2. Route 209 Spur Study Corridor

The Route 209 Spur Study Corridor contains the Fisher Mitchell School neighborhood. This neighborhood contains mostly single family housing abutting an electric power corridor. The focal point of this neighborhood is the Fisher Mitchell School, which serves as a meeting place and recreation area for neighboring residents (see Figure 10, page 23).



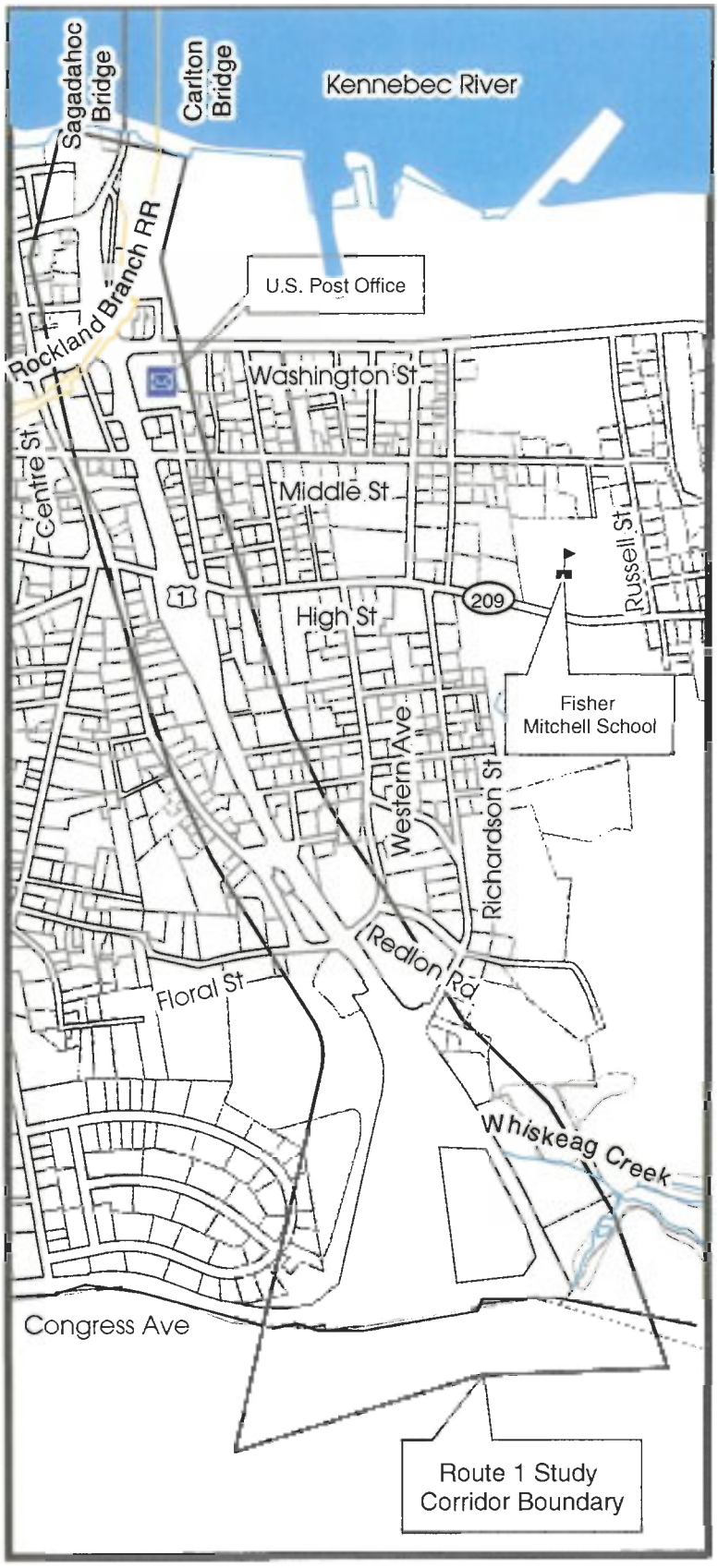
Zoning

- C2 - Mixed Use Light Commercial
- C3 - Business Park District
- I - Industrial/Shipyard District
- R1 - High-density Residential District
- B-C Business/Commercial
- Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00
Zoning
Route 209 Spur
Study Corridor

Feet
0 250 500 1,000

Figure 9



Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00

Community Facilities
Route 1 Study Corridor

Feet
0 250 500 1,000

Figure 10

2.7 Uncontrolled Petroleums and Hazardous Wastes

Additional information on uncontrolled petroleums and hazardous wastes is documented in the Bath Feasibility Study Compendium of Social and Economic Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.7.1. Route 1 Study Corridor

Record searches were conducted by MaineDOT to identify known uncontrolled petroleum, hazardous material sites, hazardous waste generators and waste disposal sites.

As depicted in Figure 11, page 25, the Route 1 Study Corridor contains several locations of uncontrolled petroleum and hazardous materials spills (referred to as "Composite Site Spills" on Figure 11). These spills generally occurred at gas stations or during the delivery of household heating fuel. In addition, the Modified Phase I Environmental Site Assessment identified numerous underground storage tanks located at properties adjacent to Route 1. These sites have the potential to leak and cause soil contamination. There is one Resource Conservation and Recover Act Generator (RCRAGN) within the Route 1 Study Corridor. It was identified as the former Dodge Auto Group (also known as the Bodwell Motors Site) (EPA ID #MED018987859) located at the corner of Route 1 and Western Avenue (Redlon Rd.). Several spills have been documented at this site.

2.7.2. Route 209 Spur Study Corridor

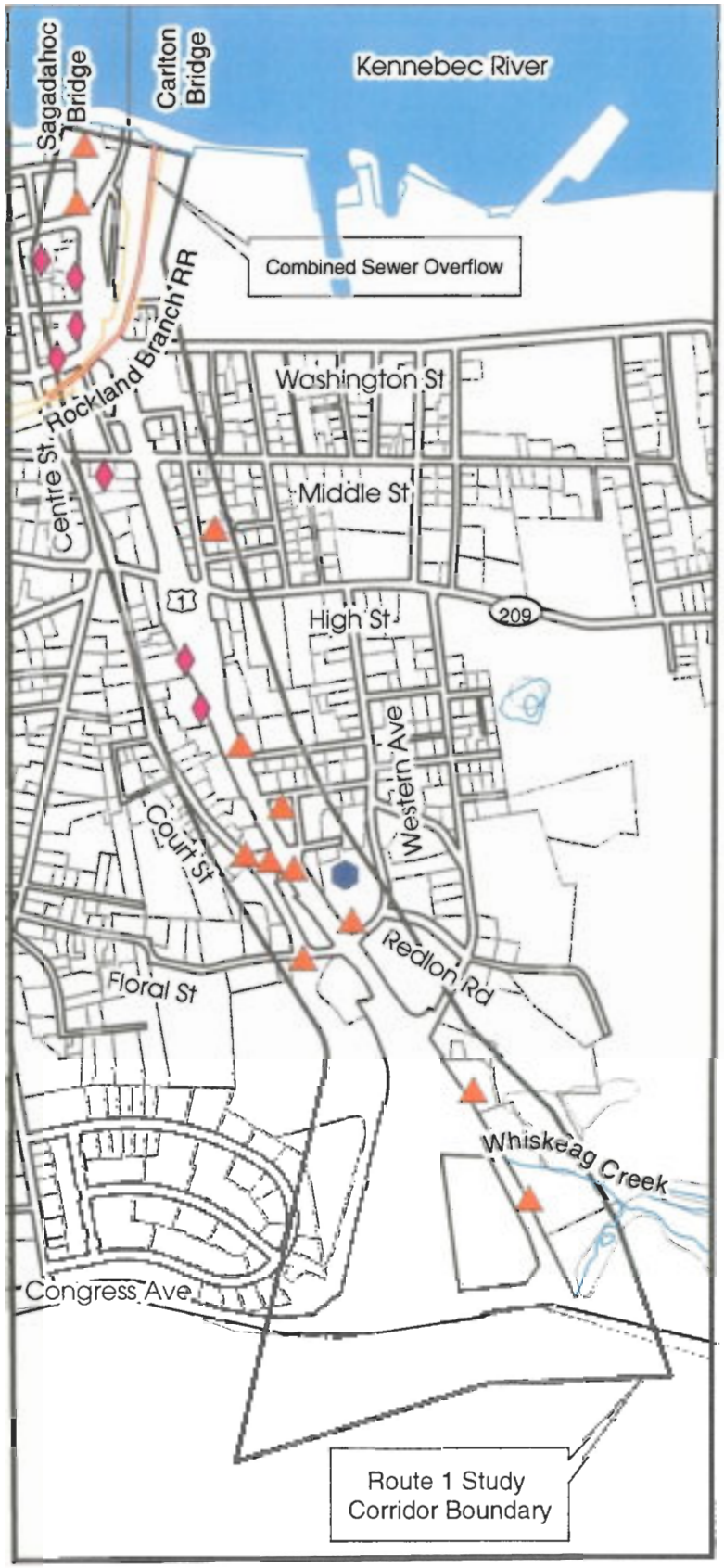
As shown in Figure 12, page 26, there are two Composite Site Spill locations within the Route 209 Spur Study Corridor. These spills generally occurred during the delivery of household heating fuel.

2.8 Utilities

Additional information on major utilities is documented in the Bath Feasibility Study Compendium of Transportation and Engineering Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.8.1. Route 1 Study Corridor

There are several local utilities located within the Route 1 Study Corridor, including underground water mains, underground sewer mains and storm drainage systems, underground and overhead electric lines, underground and overhead telephone facilities, and cable facilities. One major utility, a combined sewer overflow, exists in the Route 1 Study Corridor in the area of Washington Street (see Figure 11, page 25).



Composite Site Spill

Underground Storage Tank

RCRAGN

Property Lines

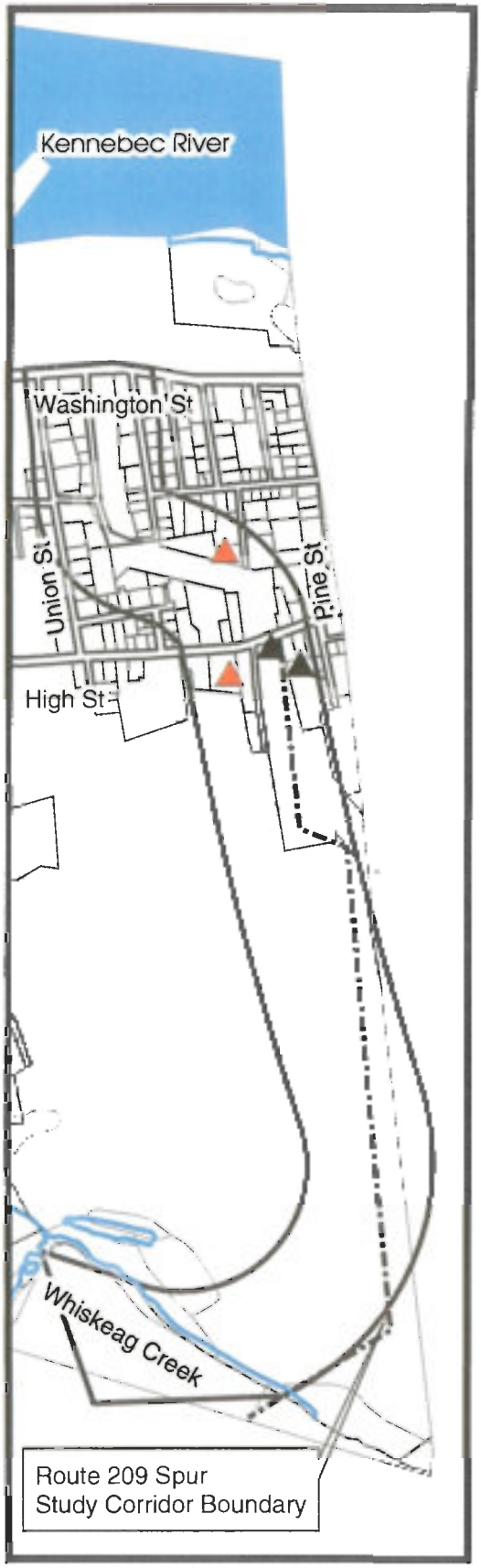
Combined Sewer Overflow

Bath Feasibility Study
Maine DOT PIN 10123.00

Uncontrolled Petroleum & Hazardous Waste Sites and Utilities
Route 1 Study Corridor

Feet
0 250 500 1,000

Figure 11



Composite Site Spill

Electric Substation

CMP Transmission Line

Property Lines

Bath Feasibility Study
Maine DOT PIN 10123.00

Uncontrolled Petroleum & Hazardous Waste Sites and Utilities Route 209 Spur Study Corridor

Feet
0 250 500 1,000

Figure 12

2.8.2. Route 209 Spur Study Corridor

Local utilities found within the Route 209 Spur Study Corridor include underground water mains, sewer mains and storm drainage systems; underground and overhead electric lines; underground and overhead telephone facilities; and cable, facilities. Major utility facilities in the corridor include a Central Maine Power transmission line running west-east through the corridor and two electrical substations near High Street (see Figure 12, page 26).

2.9 Physical and Visual Character Analysis-Route 1 Study Corridor

2.9.1. Purpose

It is the intent of the Maine Department of Transportation to integrate community values into the design of improvements to the Route 1 Corridor. To accomplish this important goal, principles of Context Sensitive Design (CSD) will be employed. The initial part of the CSD process is the Physical and Visual Character Analysis. The Study Team has reviewed the physical context of the corridor with a particular emphasis on physical elements, both natural and man-made.

For purposes of this analysis, the corridor elements are categorized by the "View From the Road" and the "View To the Road." The "View From the Road" is the views and elements seen and experienced from the vantage point of the Route 1 user. The "View To the Road" is the views and elements seen and experienced from adjacent business and homes along Route 1 toward the Route 1 corridor. The Commercial Zone is the area from the western City of Bath city limits at Congress Avenue to High Street on Route 1. The Downtown Zone is the area from High Street to the Sagadahoc Bridge on Route 1. Photographic images referred to in this section are of the existing conditions and can be found in Appendix B. Additional information is documented in the Bath Feasibility Study Compendium of Social and Economic Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda prepared for the Bath Feasibility Study is included in Appendix A of this report.

2.9.2. Corridor Context Summaries

View from the Road

The first impression of the City of Bath is made from the Route 1 Corridor. From the west, or northbound on Route 1, the first glimpse, albeit small, is that of the relatively new signature city sign. The motorist is then greeted in the Commercial Zone by the chain link fencing and metal guard rail fencing in the median and the above ground utility poles and wires that line both sides of Route 1. There are multiple and frequent curb cuts to local businesses on either side along the Route 1 Corridor in the Commercial Zone, prior to the Downtown Zone. As one approaches the Downtown Zone, Route 1 continues onto an elevated structure (the Bath Viaduct) with views of the Bath Iron Works parking and building facilities. Once on the Bath Viaduct, there is no point of egress to Downtown Bath. From the east, or southbound on Route 1, motorists have views of Downtown Bath and the Waterfront as one crosses the Sagadahoc Bridge into the City of Bath. (Refer to Images 1 to 7 in Appendix B)

- ***Fencing and Screening Devices***

Chain link fencing and metal guard rail run all along the highway median in the Commercial Zone. The fencing is unattractive and is, as intended, a physical barrier to vehicular and pedestrian movements north and south across Route 1. The same chain link fence is used for right-of-way security fencing, when used in the controlled-access portion of Route 1. (Refer to Image 2 in Appendix B)

- ***Landscape Plantings***

There is minimal planting along the corridor. There is no space available for planting along the Commercial Zone or the Downtown Zone. Landscape outcroppings have occurred along the Route 1 right-of-way. (Refer to Images 3 & 8 in Appendix B)

- ***Visual Impact of Adjacent Land Uses***

The adjacent land uses have a considerable visual impact to the corridor. Businesses along the Commercial Zone in some cases have encroached onto the Route 1 right-of-way with their parking facilities, and multiple curb cuts for access exist. (Refer to Image 3 in Appendix B). The Bath Iron Works (BIW) facility in the Downtown Zone is an important presence in the city. The physical scale of its facilities with its buildings, ships and cranes provide a positive gateway feature to the City of Bath from the east. The parking required to accommodate BIW employees has caused encroachment problems in the Downtown Zone with large surface lots adjacent to the Route 1 corridor. (Refer to Image 5 in Appendix B)

- ***Signage / Wayfinding***

The sign at the entry to the city from the west is visually attractive and establishes an identity for the City of Bath. Yet the scale is small in relation to its context (Refer to Image 1 in Appendix B). There is no entry sign to the city from the eastern city limits. The Route 1 Corridor lacks a wayfinding system – both physical and intuitive. The transient motorist has little chance to acknowledge that they are in the Historical City of Bath. There is only a small sign located on the High Street Bridge to indicate the Historic downtown Bath. However, this location leaves the motorist little time to make the decision to take the exit to downtown (Refer to Image 4 in Appendix B). The only opportunity for motorists to get an extensive view of Historic Downtown Bath is when approaching the city from the east. (Refer to Image 7 in Appendix B)

- ***Streetscape Components***

The frontages along the Route 1 Corridor do not have streetscape components, such as sidewalks, benches, lighting, or pavers. Both the Commercial Zone and the Downtown Zone contain retail, office and mixed-use buildings with some residential in the Commercial Zone. Generally, most street frontages in the Commercial Zone do not provide pedestrian sidewalks. (Refer to Image 9 in Appendix B)

Views to the Road

The view to the road is unattractive. The adjacent businesses on either side of the Study Corridor in the Commercial Zone front onto Route 1. They face a metal guard rail with chain link fencing on top and no landscape areas. (Refer to Image 9 in Appendix B) In the Downtown Zone, there is an elevated structure, the Bath Viaduct. The viaduct lacks aesthetics and has caused a visual, physical and psychological barrier between the northern and southern parts of the city. Crossing for pedestrians is difficult and potentially unsafe because the crossings are unorganized and ill-defined. (Refer to Image 12 in Appendix B) The Downtown Zone could take more advantage of its historic

and vibrant downtown and the viaduct could tie in better architecturally to the Sagadahoc Bridge and its surroundings by applying some of the vernacular textures, colors, and materials. (Refer to Image 11 in Appendix B)

- ***Fencing and Screening Devices***

The same chain link fence is used for right-of-way security fencing. Landscape outcroppings have served as screening for adjacent neighborhoods. (Refer to Image 13 in Appendix B)

- ***Landscape Plantings and Berms***

Overgrown plantings have occurred along the right-of-way security fencing. There was some effort made to include planting in planter boxes beneath the viaduct in the Downtown Zone, but it is un-maintained, stands empty, and does not tie well with the viaduct architecture. (Refer to Image 14 in Appendix B)

- ***Visual Impact of Adjacent Land Uses***

The adjacent land uses have an important role in the visual aesthetics of the corridor. Historic Downtown Bath has maintained its historic architecture and storefront businesses, but it is only relegated to a few streets and generally does not extend to the Route 1 Study Corridor. The City of Bath prides itself as 'The City of Ships' with its waterfront natural resource. However, the adjacent businesses back up to the waterfront. (Refer to Image 15 in Appendix B) There could be a better visual connection from the main streets of downtown to the waterfront and the waterfront park with enhanced access and orientation. (Refer to Image 16 in Appendix B)

- ***Signage / Wayfinding***

There are two signs, similar in size and design as the entry sign, located beneath the Route 1 Bath Viaduct to direct you to the historical and cultural amenities in the city. (Refer to Image 17 in Appendix B)

- ***Streetscape Components***

Route 1 corridor roadway elements lack an aesthetic architectural style unlike the Historic Downtown Bath. Downtown Bath is pedestrian friendly and has an appropriate human scale to its streetscape elements. Elements that are in good to fair condition include brick sidewalks, granite curbs, pedestrian-scaled lighting, street trees, bollards, bike racks, trash receptacles and benches. (Refer to Image 18 in Appendix B). Although the Route 1 corridor serves a different transportation function than Downtown Bath, some of the Downtown Bath streetscape elements may be appropriate for the Route 1 corridor.

2.9.3. Results of Inventory

The City of Bath's rich history and cultural and natural amenities are vital resources to maintain and protect. Drawing these resources into the corridor is fundamental to the revitalization of the Commercial Zone and Downtown Zone of the Route 1 corridor. The elements depicted from these resources can enhance both the "Views to the Road" as well as the "Views from the Road". With proposed unified enhancement treatments such as incorporation of the vernacular architecture, providing streetscape components, landscape, and improved pedestrian access throughout the corridor, a sense of community and a gateway to the City of Bath will be created.

Chapter 3: Improvement Options

This chapter documents the highway and rail improvement options that have been developed and evaluated for this study.

Three improvement options were initially developed for Route 1 in the Commercial Zone, which is defined for purposes of this study as the section of Route 1 from Congress Avenue to High Street. (See Figure 1, page 3) Options in the Commercial Zone are designated with the prefix "C." During the later stages of this study, a fourth option was developed in the Commercial Zone as a modification of Option C-1. This option, named Option C-1 w/Crossover, is described in Section 4.4.1, page 70. Five improvement options were developed for Route 1 in the Downtown Zone, which is defined for purposes of this study as the section of Route 1 from High Street to the Sagadahoc Bridge. Options in the Downtown Zone are designated with the prefix "D." (See Figure 1, page 3)

In addition to the Route 1 options, a single option for the potential Route 209 Spur was developed based on a previous MaineDOT study completed in 1995. There are other potential alignment options for a Route 209 Spur. These were not considered as part of this Bath Feasibility Study because the primary purpose for including a potential Route 209 Spur in this study is to determine its utility in positively affecting traffic volumes and operations on Route 1.
Finally, eight railroad options plus variations were developed and evaluated.

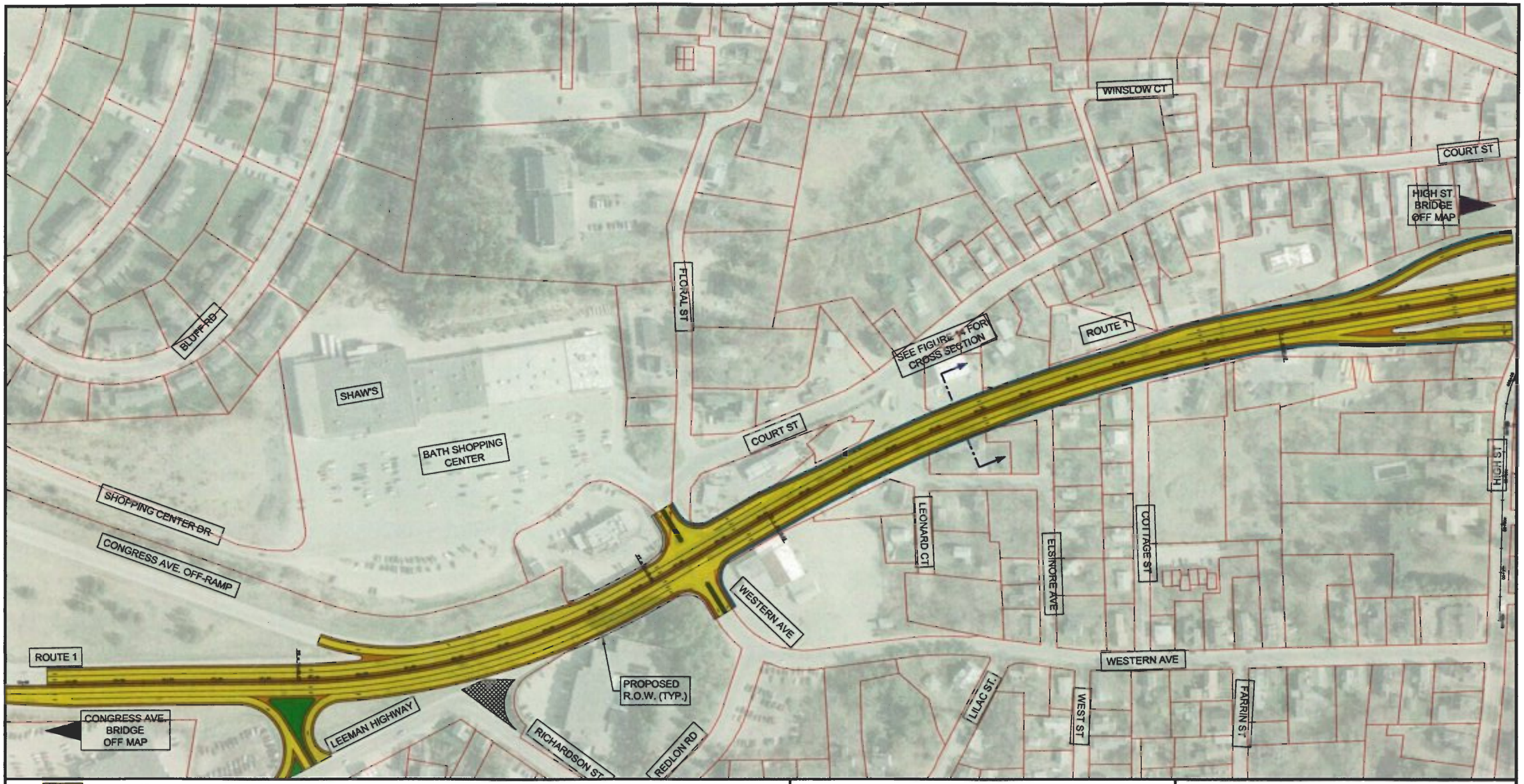
3.1 Route 1 Options – Commercial Zone

3.1.1. Option C-1

Description
Option C-1 (see Figure 13, page 31) would provide a four-lane Route 1 roadway facility consisting of two 12-foot lanes in each direction separated by a concrete median barrier. Five-foot inside and outside paved shoulders would be provided in each direction. Option C-1 would begin just east of the Congress Avenue Bridge over Route 1 and continue to the High Street Bridge, for a total length of 0.64 miles. A five-foot sidewalk and optional five-foot planting buffer would be provided along both sides of Route 1 from the Western Avenue intersection to High Street. Additional right-turn lanes would be provided at proposed intersections and at off-ramps. Acceleration lanes would be provided at on-ramp locations. A typical cross-section of Option C-1 is illustrated on Figure 14, page 32.

The horizontal and vertical alignments would generally follow the existing Route 1 alignments. Minor widening on each side of Route 1 would be necessary. Vertical grades up to 5% are proposed along this section of Route 1, which is consistent with existing roadway grades.

Access
Under Option C-1, access to Route 1 in this area would remain mostly unchanged from existing conditions. A median divider would be maintained throughout this section of Route 1 thereby preventing through movements across Route 1 and prohibiting left turn movements in and out of cross streets and driveways. Like the existing condition, right

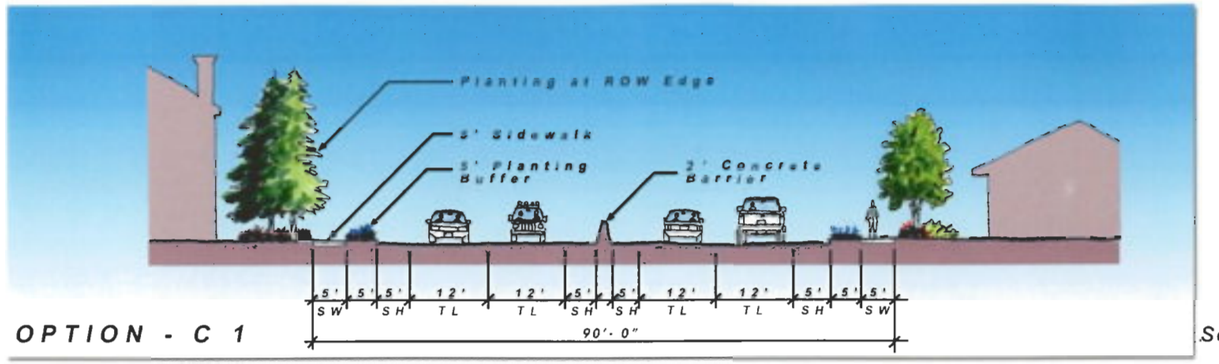


BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00

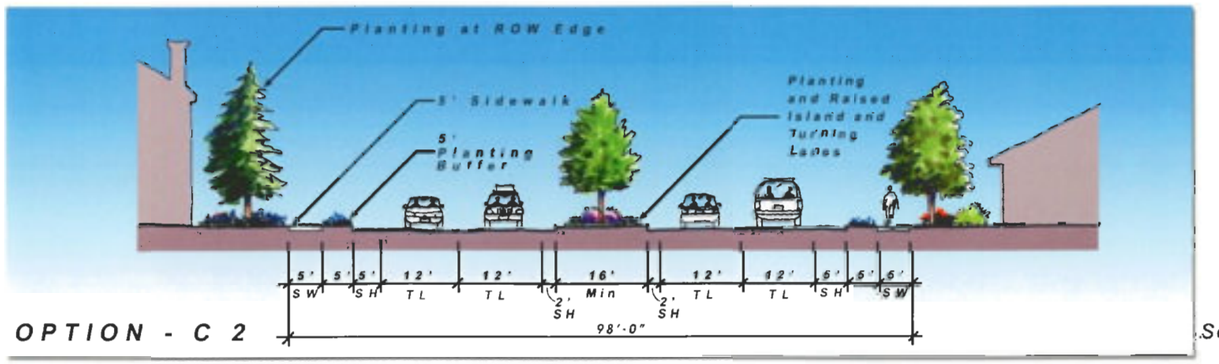
OPTION C-1

FIGURE 13



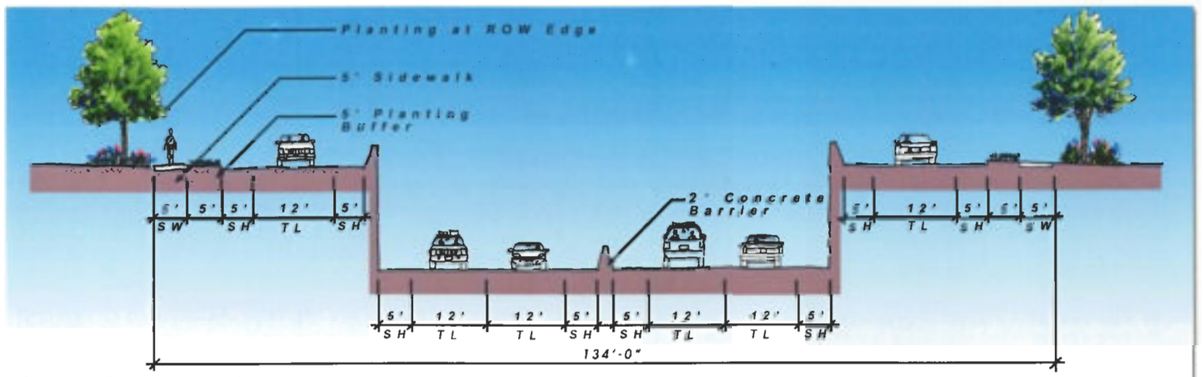
OPTION - C 1

See Figure 13 for location of cross section



OPTION - C 2

See Figure 15 for location of cross section



OPTION - C 3A

See Figure 16 for location of cross section

LEGEND

SW	Sidewalk	ROW	Right-of-Way
SH	Shoulder		
TL	Travel Lanes		

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION

BATH FEASIBILITY STUDY
Maine DOT # 10123.00

COMMERCIAL ZONE
Option CI, C2 & C3A Cross-Sections
FIGURE 14

turn movements would be allowed at the Western Avenue and Bath Shopping Center entrance intersections with left turns and movements across Route 1 prohibited. Route 1 access would be provided at High Street to and from the south, like the existing condition. Also, the Route 1 southbound off-ramp to Congress Avenue and northbound off-ramp to Leeman Highway would be maintained. The on-ramp from Leeman Highway to Route 1 northbound would be relocated to the south in order to provide adequate length for weave movements between entering traffic and right-turning traffic at the Western Avenue intersection. Existing access to abutting properties would be maintained, subject to consolidation under an Access Management Strategy (see Section 4.5, page 84).

3.1.2. Option C-2

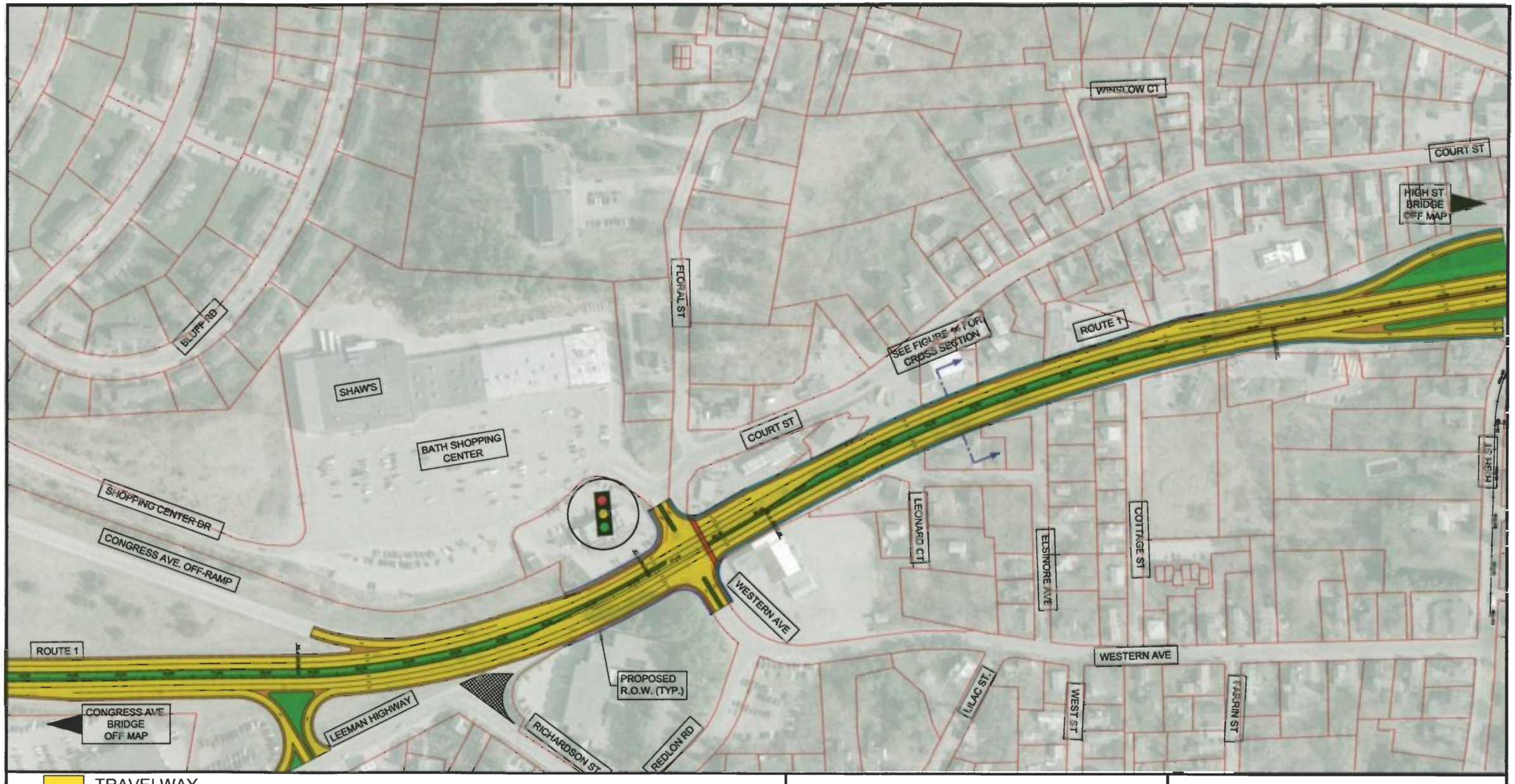
Description

Option C-2 (see Figure 15, page 34) would provide a four-lane Route 1 roadway facility consisting of two-12-foot lanes in each direction separated by a variable width raised island. This raised island would transition to a concrete median barrier near High Street. Five-foot outside shoulders and two-foot inside shoulders would be provided in both directions. Option C-2 would provide a median break at the intersection of Route 1 with Western Avenue and the Bath Shopping Center, allowing turning movements in all directions. A traffic signal would be provided here. Option C-2 would begin just east of the Congress Avenue Bridge and continue to the High Street Bridge, for a total length of 0.64 miles. A five-foot sidewalk and optional five-foot planting buffer would be provided along both sides of Route 1 from the Western Avenue intersection to High Street. Additional left-turn and right-turn lanes would be provided at proposed intersections and at off-ramps. Acceleration lanes would be provided at on-ramp locations. A typical cross-section of Option C-2 is illustrated on Figure 14, page 32. With the wider median required to develop the left turn lanes at the Route 1 intersection with Western Avenue and Bath Shopping Center, there will be additional opportunity for plantings in the wide portions of the median.

The horizontal and vertical alignments would generally follow the existing Route 1 alignments. Widening on each side of Route 1 would be necessary. Vertical grades up to 5% are proposed along this section of Route 1, which is consistent with existing roadway grades.

Access

Under Option C-2, access to Route 1 in this area would remain mostly unchanged from existing conditions, and would be the same as Option C-1, except that a break would be provided in the median at the intersection with Western Avenue and Bath Shopping Center entrance. This median break would increase access across Route1 and provide for all turning movements, under traffic signal control. Route 1 access would be provided at High Street to and from the west. Also, the Route 1 southbound off-ramp to Congress Avenue and northbound off-ramp to Leeman Highway would be maintained. The on-ramp from Leeman Highway to Route 1 northbound would be relocated to the west in order to provide adequate length for weave movements between entering traffic and traffic turning at the Western Avenue intersection.


WINSLOW CT
COURT ST
HIGH ST BRIDGE OFF MAP
FLORAL ST
BLUFF RD
SHAWS
BATH SHOPPING CENTER
SEE FIGURE 14 FOR CROSS SECTION
ROUTE 1
COURT ST
HIGH ST
SHOPPING CENTER DR
CONGRESS AVE. OFF-RAMP
LEONARD CT
ELSINORE AVE
COTTAGE ST
WESTERN AVE
ROUTE 1
PROPOSED R.O.W. (TYP.)
WESTERN AVE
LILAC ST
WEST ST
FARRIN ST
CONGRESS AVE BRIDGE OFF MAP
LEEMAN HIGHWAY
RICHARDSON ST
REDLON RD
TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PAVEMENT REMOVAL
PROPERTY LINES
200 0 200 400
FEET
BATH
City of Ships
DEPARTMENT OF TRANSPORTATION
BATH FEASIBILITY STUDY
MaineDOT PIN # 10123.00
OPTION C-2
FIGURE 15

3.1.3. Option C-3A

Description

Option C-3A (see Figure 16A and B, pages 36 and 37) would provide a four-lane Route 1 roadway facility consisting of two 12-foot lanes in each direction separated by a concrete median barrier from Congress Avenue to High Street, a total length of 0.87 miles. Five-foot inside and outside shoulders would be provided in both directions on Route 1. In order to provide complete separation of through traffic from entering/exiting traffic and cross traffic, Route 1 would be depressed below grade beginning near Richardson Street, and then Route 1 would return at-grade near the High Street ramps. One-way frontage roads would be provided parallel to, and above the depressed Route 1, from the area of Richardson Street to the on- and off-ramps at High Street to provide for local access. A typical cross-section of Option C-3A is illustrated on Figure 14, page 32. Option C-3A would provide a signalized at-grade intersection (over Route 1) of the two frontage roads with Western Avenue and the Bath Shopping Center entrance. The signalized intersection would include permitted unsignalized u-turn movements to facilitate access to abutting properties from both directions.

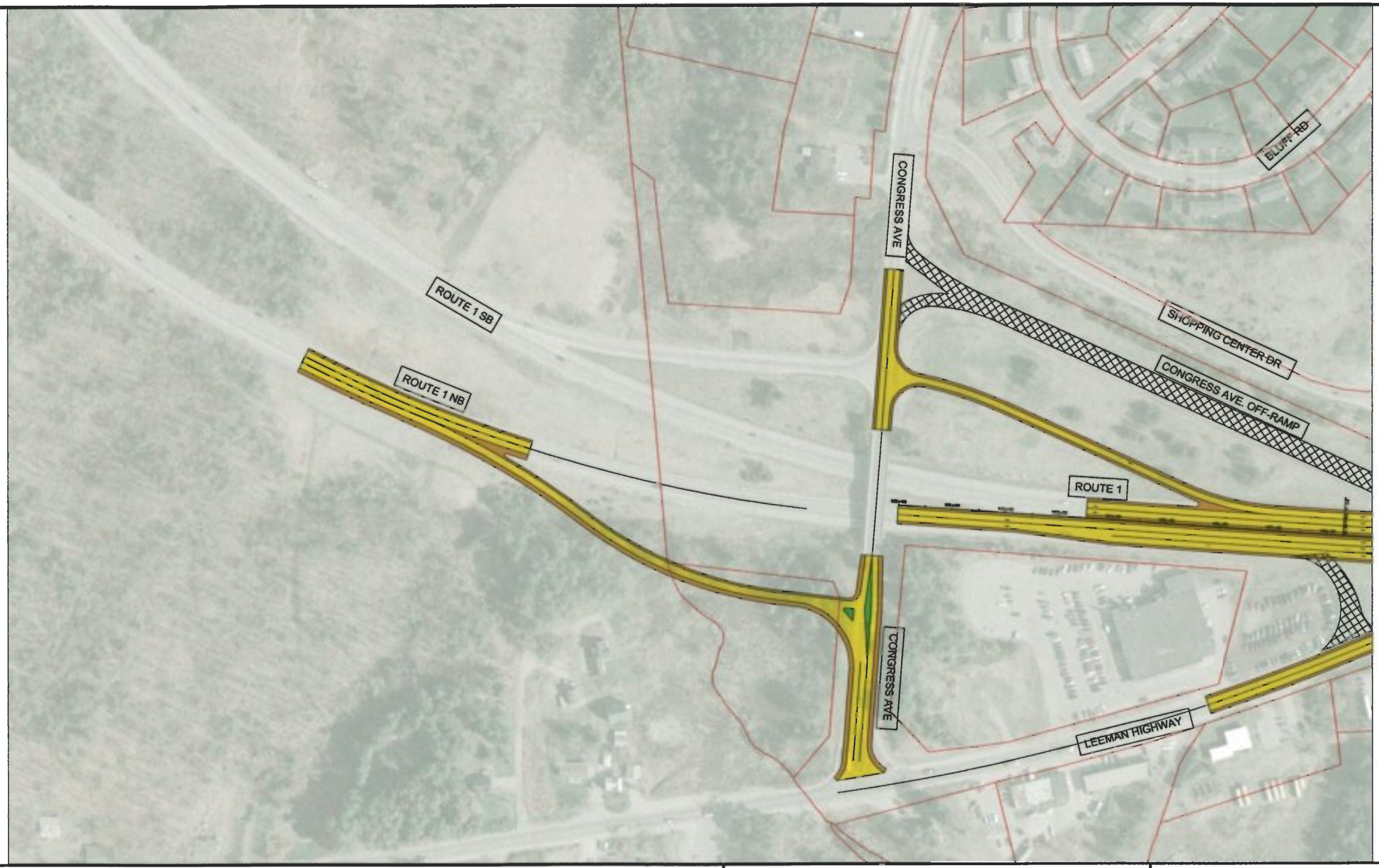
New interchange ramp connections with Congress Avenue would also be provided. A new northbound off-ramp would be provided west of Congress Avenue replacing the existing ramps onto Leeman Highway. A relocated southbound off-ramp onto Congress Avenue would also be provided to allow proper merging between the southbound frontage road and the relocated southbound off-ramp.

Each frontage road would consist of 20-foot wide pavement, including one travel lane and shoulders. A five-foot sidewalk and optional five-foot planting buffer would be provided along the outside of each frontage road from Western Avenue to High Street. Improvements to Western Avenue from Route 1 to Richardson Street would be provided, because this routing would replace the existing ramp from Route 1 northbound to Leeman Highway southbound. Western Avenue could be dead-ended at its western terminus to discourage cut-through traffic through the Western Avenue neighborhood.

Widening to each side of Route 1 would be necessary. Vertical grades up to 5% are proposed along this section of Route 1, including the depressed section, which is consistent with existing roadway grades. Vertical grades up to 7% are proposed on the frontage roads.

Access

Under Option C-3A, access to Route 1 in this area would only be provided via the frontage roads. All turning movements would be allowed at the frontage road intersection with Western Avenue and Bath Shopping Center entrance. Route 1 access to and from the west to High Street would be provided from the frontages roads only. The Route 1 southbound off-ramp to Congress Avenue and northbound off-ramp to Leeman Highway would be relocated as identified above. The access ramp from Leeman Highway to Route 1 northbound would be eliminated. All local traffic access to Route 1 from Richardson Street and Leeman Highway would be relocated to the Western Avenue and the Bath Shopping Center entrance intersection. The southbound off-ramp to Congress Avenue will be relocated to the west in order to provide adequate length for weave movements between entering traffic and traffic turning at the Western Avenue intersection.



TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PAVEMENT REMOVAL
PROPERTY LINES

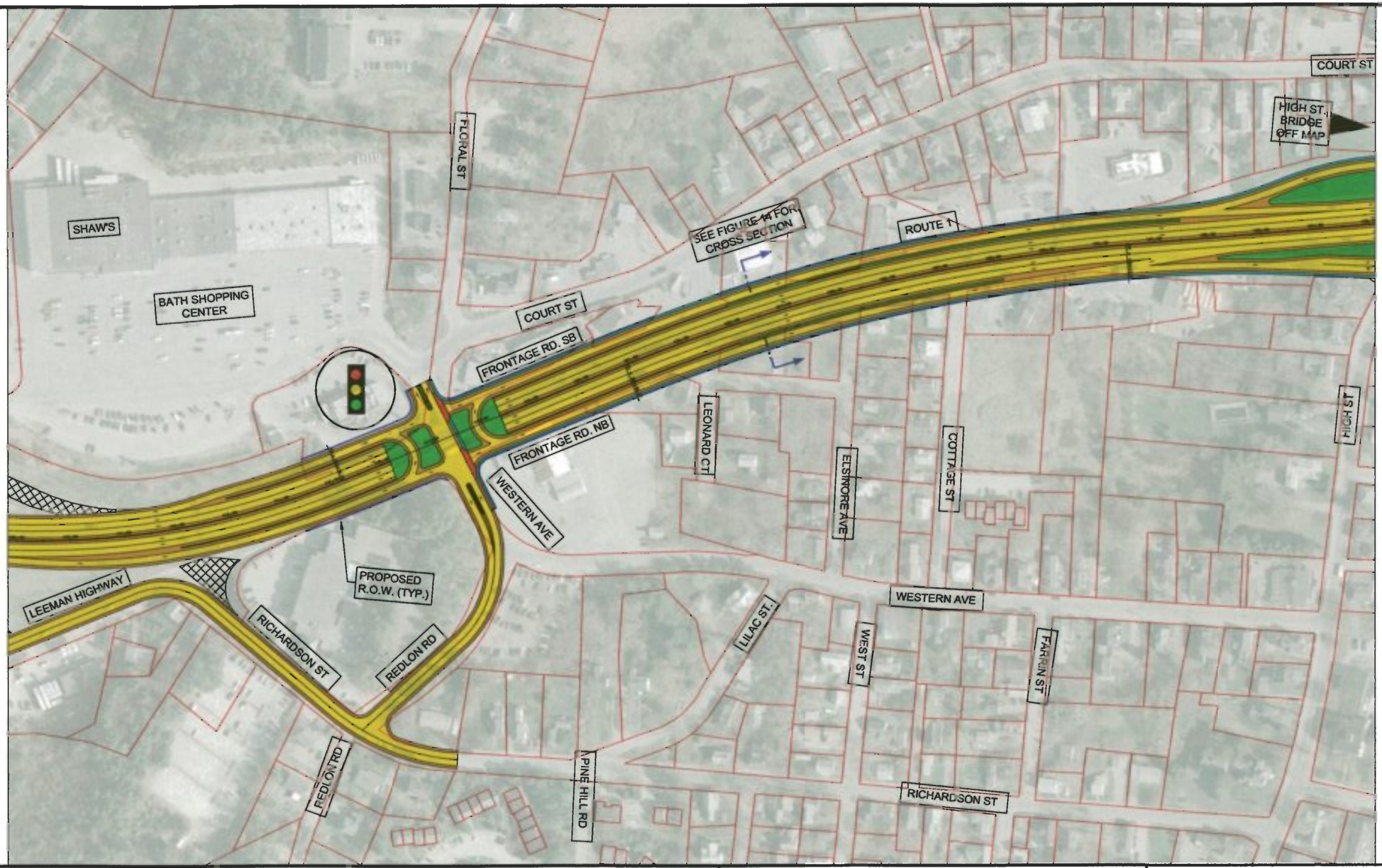
200 0 200 400
FEET

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION
MAINE

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
OPTION C-3A
FIGURE 16A



TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PAVEMENT REMOVAL
PROPERTY LINES

200 0 200 400
FEET

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
OPTION C-3A
FIGURE 16B

3.2 Route 1 Options – Downtown Zone

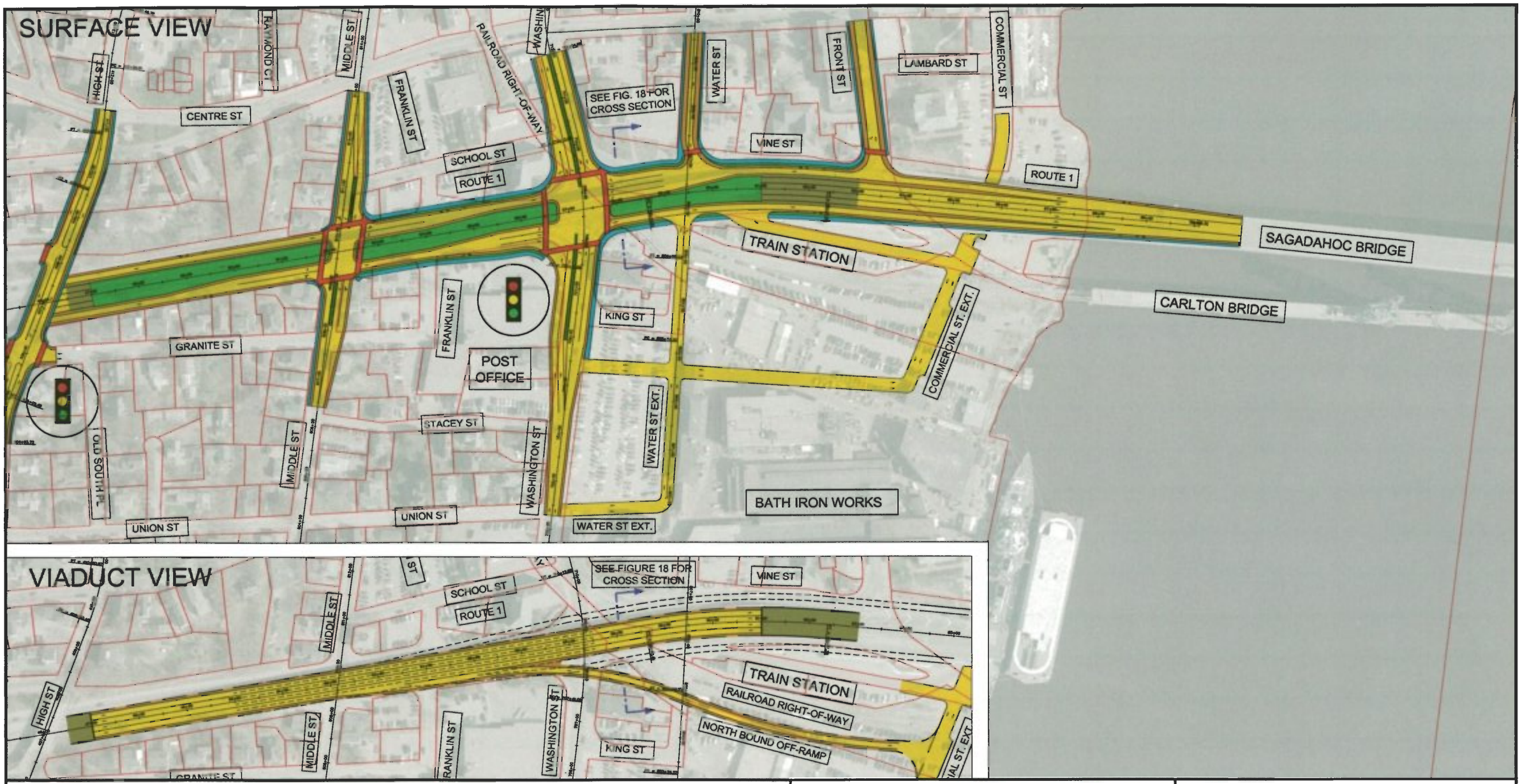
3.2.1. Option D-1

Description
Option D-1 (see Figure 17, page 39 and Figure 18, page 40) would provide a four-lane Route 1 roadway facility elevated on a viaduct. Two 12-foot travel lanes and a five-foot paved shoulder would be provided in each direction, undivided. In addition, a proposed northbound off-ramp from the viaduct would provide new access to Commercial Street, BIW, and the downtown area. An additional lane on the viaduct for this off-ramp would begin over Middle Street and would separate from the viaduct over Washington Street. This elevated off-ramp would cross over Water Street; and then continue south of the Rockland Branch rail line and transition to connect with a proposed extension of Commercial Street. This off-ramp and the proposed Commercial Street Extension would be located on land currently owned by BIW and used for parking. The approximate length of Route 1 from High Street to the Sagadahoc Bridge would be 0.42 miles.

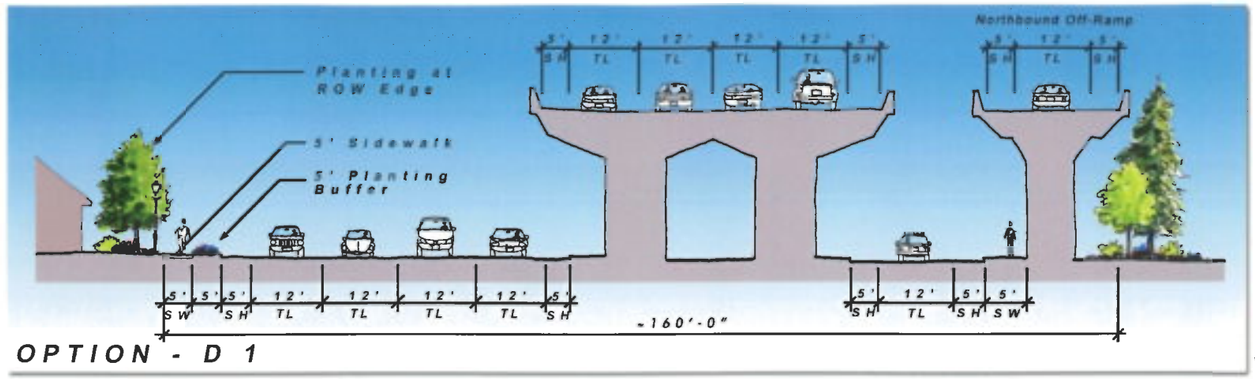
The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five-foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street and Water Street to the north.

Widening to each side of Route 1 and Leeman Highway would be necessary. Vertical grades up to 5% were proposed along this section of Route 1, including the proposed northbound off-ramp. This is consistent with existing viaduct grades.

Access
The general configuration of the local street network under the viaduct would remain unchanged. Leeman Highway one-way frontage roads would begin under High Street and continue east to the Sagadahoc Bridge. The Leeman Highway intersection with Middle Street would be signalized with turning lanes, center islands, sidewalks, and cross walks. The Leeman Highway intersection with Washington Street would remain signalized and would be widened for additional turning lanes. Pedestrian sidewalks and crosswalks would be provided. Water Street access to Leeman Highway from the south would permit right turn movements only. Vine Street and Water Street to the north would become one-way streets west and north respectively. Front Street access to the Route 1 southbound off-ramp and Vine Street would permit right-turn movements only. Access to the Bath Train Station would be reconfigured to provide only right-turn movements to Leeman Highway. To improve mobility and access in the BIW area and Bath Train Station, the extension of Water Street southerly and westerly to Union Street would be provided as well as the extension of Commercial Street southerly and westerly to Washington Street. Access to Route 1 northbound in this area would be from Leeman Highway, like the existing condition. The proposed Route 1 northbound elevated off-ramp to Commercial Street Extension would be provided as described above. Access to

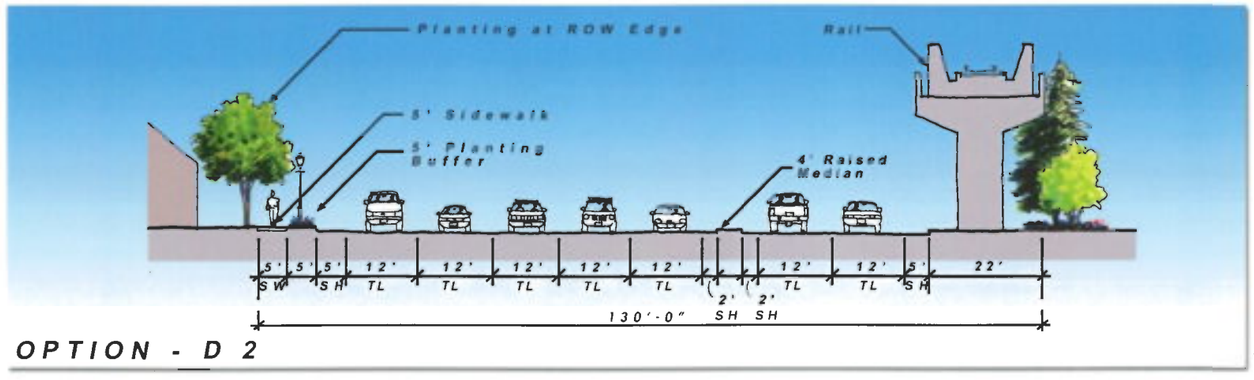


BATH FEASIBILITY STUDY
MaineDOT PIN # 10123.00
OPTION D-1
FIGURE 17



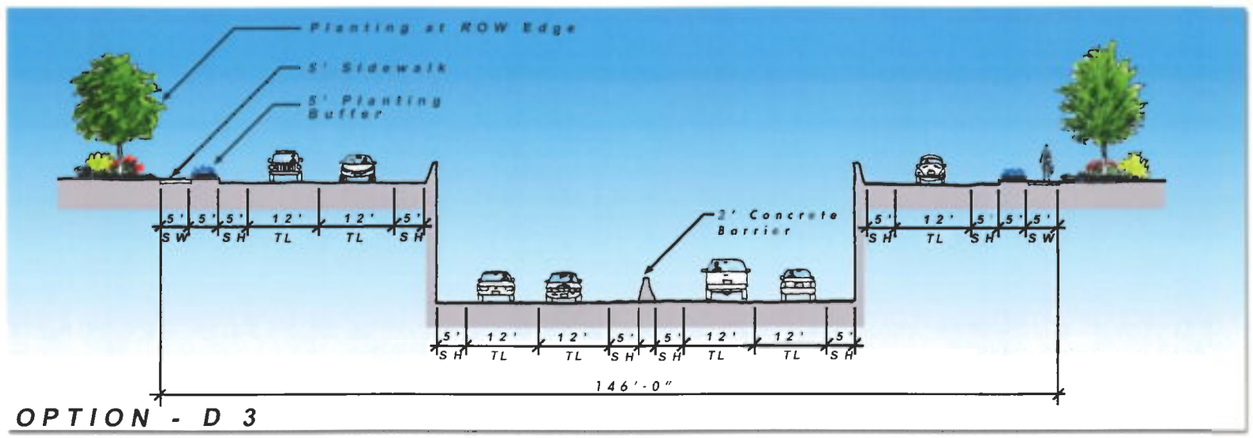
OPTION - D 1

See Figure 17 for location of cross section



OPTION - D 2

See Figure 19 for location of cross section



OPTION - D 3

See Figure 20 for location of cross section

LEGEND

SW	Sidewalk	ROW	Right-of-Way
SH	Shoulder		
TL	Travel Lanes		

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION

BATH FEASIBILITY STUDY
Maine DOT # 10123.00

DOWNTOWN ZONE
Option DI, D2 & D3 Cross-Sections
FIGURE 18

Route 1 from local roads under the Route 1 viaduct would be provided as described above.

3.2.2. Option D-2

Description

Option D-2 (see Figure 19, page 42 and Figure 18, page 40) would remove the Bath Viaduct and replace it with a roadway facility at-grade with the local street network. Route 1's basic roadway cross-section would be four-lanes with two-lanes in each direction divided by a grassed or landscaped median. Twelve-foot travel lanes and five-foot paved shoulder widths would be proposed along Route 1. Additional turning lanes would be provided at signalized intersection locations. The Route 1 intersection with Middle Street would be signalized with turning lanes, center islands, sidewalks, and cross walks. The Route 1 intersection with Washington Street would remain signalized and would be widened for turning lanes, including dual left turning lanes. Route 1 would be seven lanes wide at Washington Street. Pedestrian sidewalks would be provided along Route 1 from the Middle Street intersection to the Sagadahoc Bridge and crosswalks would be provided at the signalized intersections. Water Street access to Route 1 from the south would permit right turn movements only. Vine Street and Water Street to the north would become one-way streets west and north respectively. Front Street access to the Route 1 southbound off-ramp and Vine Street would permit right-turn movements only. Access to the Bath Train Station would be reconfigured to provide only right-turn movements to Route 1. To improve mobility and access in the BIW area, the extension of Water Street southerly and westerly to Union Street would be proposed. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five-foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street and Water Street to the north. The approximate length of Route 1 from High Street to the Sagadahoc Bridge would be 0.42 miles.

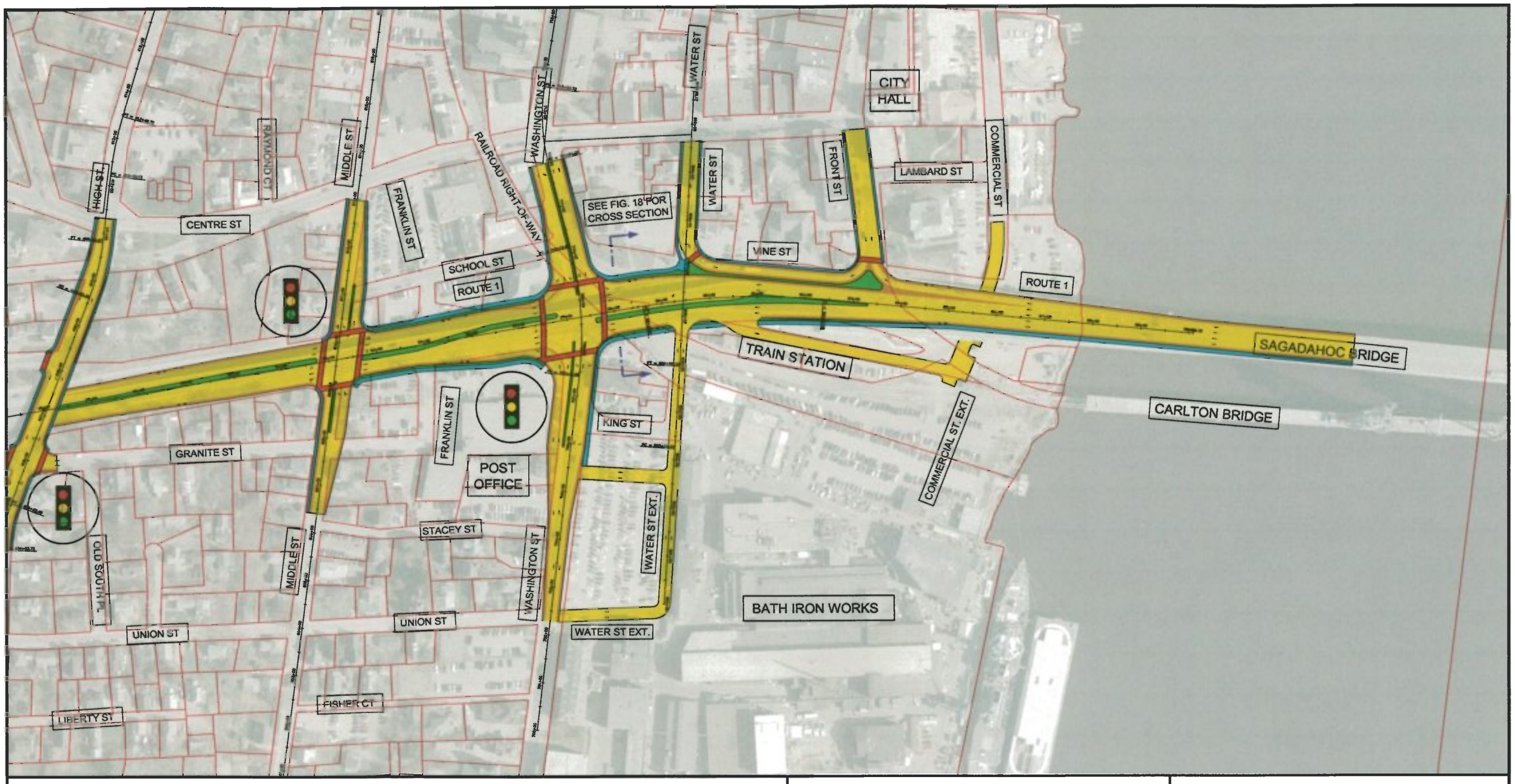
The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks.

Option D-2 would create an at-grade crossing with the existing Rockland Branch Railroad in the area of Washington Street. Relocation of the rail line would be required in order to maintain separation between Route 1 and the rail line. The railroad relocation options that were considered are presented in Section 3.4, page 54.

Widening to each side of Route 1 and Leeman Highway would be necessary. Vertical grades up to 5% were proposed along this section of Route 1, consistent with existing viaduct grades.

Access

Access to Route 1 in this area would be provided at the signalized intersections of Middle and Washington Street. Right-turn movements with Water Street to the south would be permitted as described above. Route 1 access to and from the south to High Street would be provided consistent with the C Options (see Section 3.1, page 30).



TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PROPERTY LINES

200 0 200 400
FEET

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION MAINE

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
OPTION D-2
FIGURE 19

3.2.3. Option D-3

Description

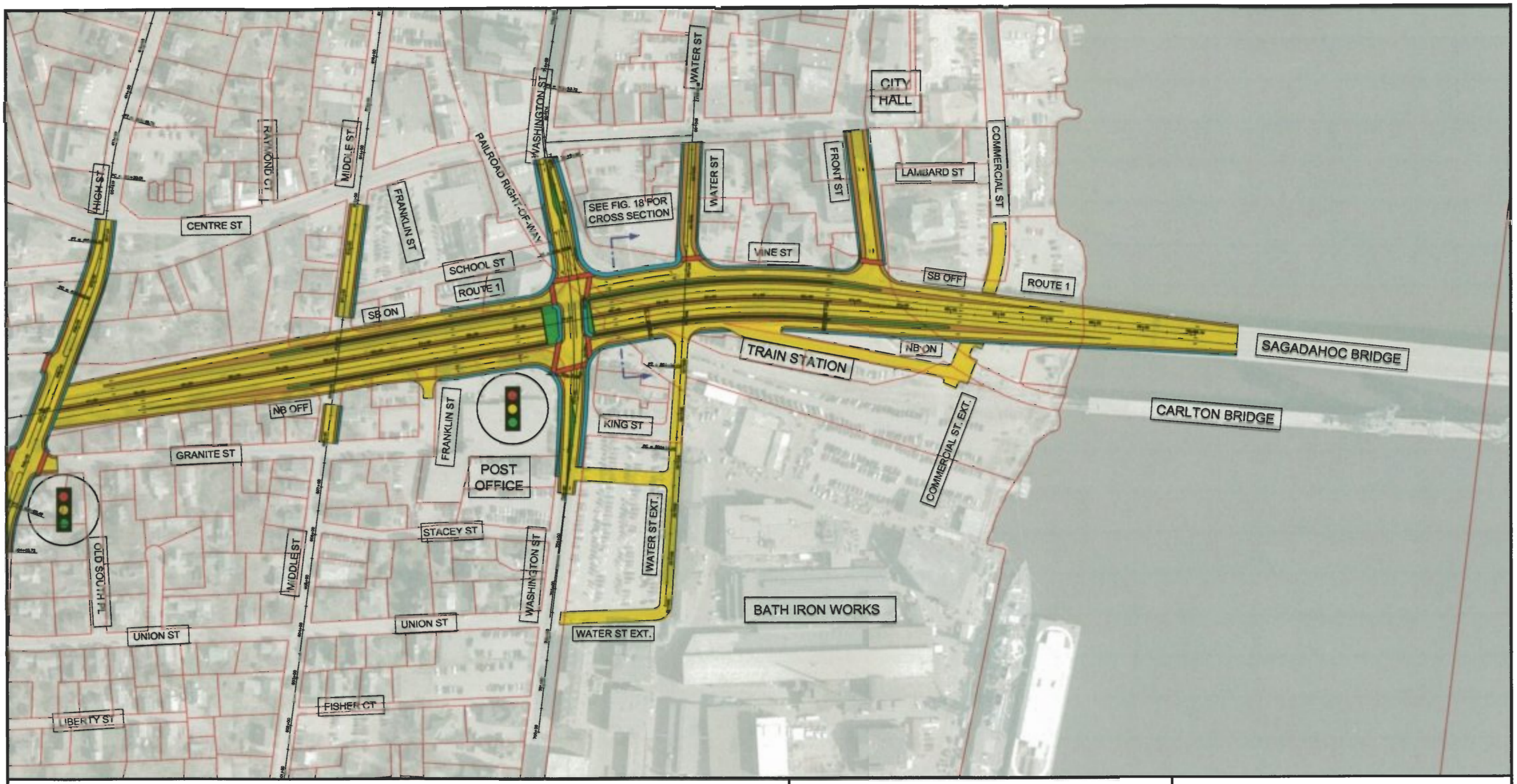
Option D-3 (see Figure 20 page 44 and Figure 18, page 40) would remove the Bath Viaduct and construct a Route 1 roadway facility depressed under the local street network. Route 1 would consist of four-lanes with two-lanes in each direction separated by a concrete median barrier. One-way ramps/frontage roads would be constructed from the Middle Street area to the Sagadahoc Bridge ramps. Option D-3 would propose a signalized at-grade intersection with the ramps/frontage roads and Washington Street. Route 1 would be depressed under this signalized intersection then return at-grade near Middle Street and at the ramps to the Sagadahoc Bridge. Additional turning lanes, center islands, sidewalks, and crosswalks would be provided at the signalized intersection. The Middle Street crossing of Route 1 would be eliminated with this option, as Route 1 is transitioning from at-grade to depressed in this location. Middle Street north and south would become dead-end streets.

Pedestrian sidewalks would be provided along the ramps/frontage roads of Route 1 from Franklin Street to the Sagadahoc Bridge. Water Street access to Route 1 from the south would permit right turn movements only. Water Street to the north would become a one-way street north and Vine Street would become part of the ramps/frontage roads. Front Street access to the Route 1 southbound off-ramp would permit right-turn movements only. Franklin Street access from the south would also permit right-turn movements onto the frontage road. Access to the Bath Train Station would be reconfigured to provide only right-turn movements to Route 1. To improve mobility and access in the BIW area, the extension of Water Street southerly and westerly to Union Street would be proposed. Twelve foot travel lane and 5-foot paved shoulder widths would be proposed along Route 1. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street and Water Street to the north. The approximate length of Route 1 from High Street to the Sagadahoc Bridge would be 0.42 miles.

The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks.

Option D-3 would maintain a grade separated crossing with the Rockland Branch Railroad. The relocated railroad line (see Rail Alignment Option #7-Realignment in City, Figure 27, page 55) would continue to be at-grade with the local street network, crossing Washington Street at-grade, on the proposed bridge directly above the depressed Route 1. Minor realignment of Washington Street and the Rockland Branch Railroad to the west would be required in order to meet minimum vertical clearance requirements. The Rockland Branch Railroad relocation options that were considered are presented in Section 3.4, page 54.

Vertical grades up to 7% were proposed along this section of Route 1, consistent with design standards.



TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PROPERTY LINES

200 0 200 400
FEET

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
OPTION D-3
FIGURE 20

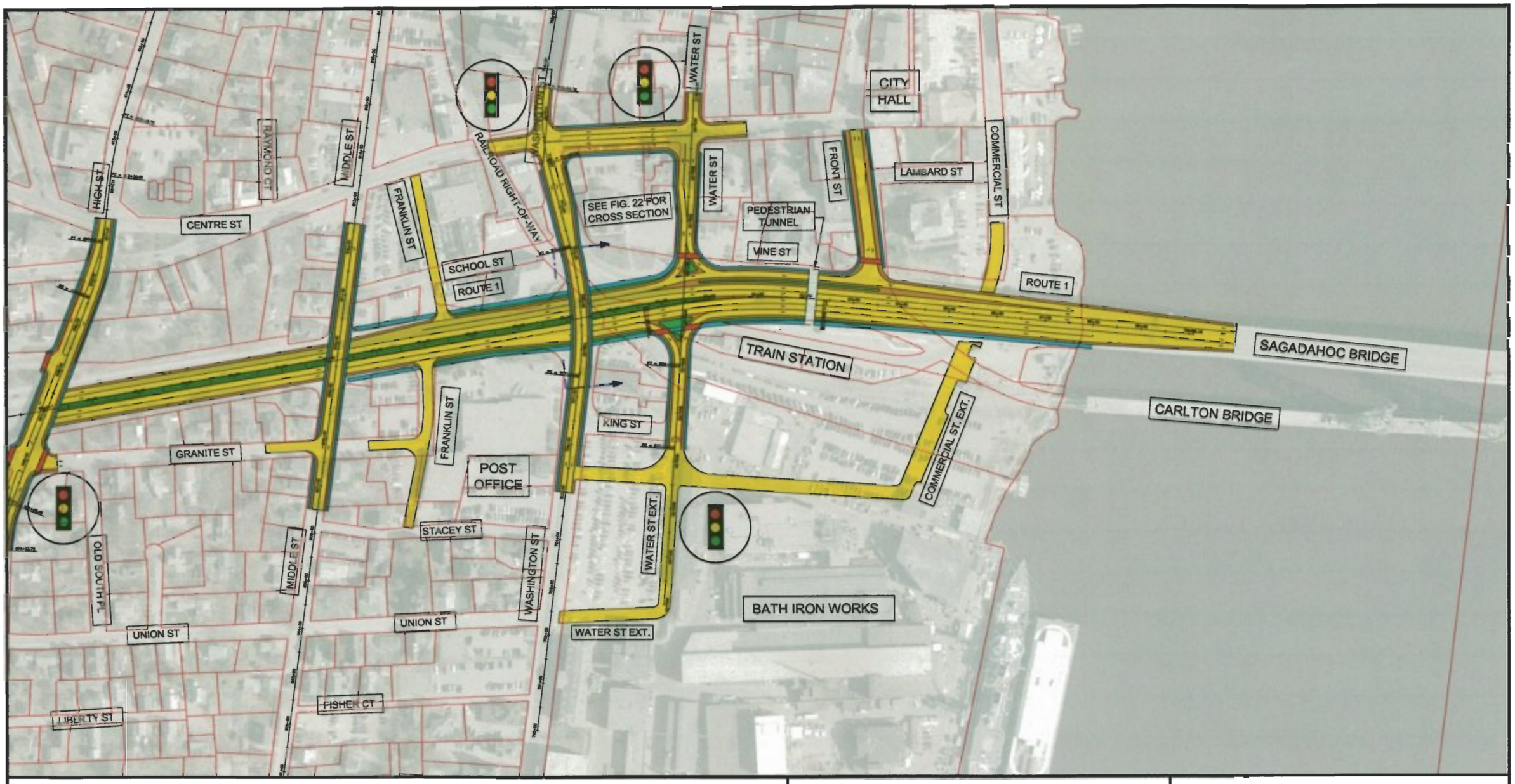
Access
Access to Route 1 in this area would be from the frontage roads of Route 1. All turning movements would be allowed at the signalized intersection of Washington Street. Right-turn movements with Water Street to the south would be permitted as described above. Middle Street would have no access to the frontage roads of Route 1. Route 1 access to and from the south to High Street would be provided consistent with the C Options (see Section 3.1, page 30).

3.2.4. Option D-4

Description
Option D-4 (see Figure 21, page 46 and Figure 22, page 47) would remove the Bath Viaduct and construct a Route 1 roadway facility at-grade with the downtown. The local street crossings would be grade separated with bridges over Route 1, resulting in a non-signalized Route 1 corridor. Route 1 would consist of four-lanes with two-lanes in each direction separated by a grassed and landscaped median. Additional lanes would be provided on Route 1 in the ramp areas for proper acceleration and deceleration. The vertical alignments of Middle and Washington Streets would be modified to overpass Route 1. Full access to Downtown Bath would be provided with at-grade low speed ramps at Water Street north and south. The use of local streets including Water, Centre, Washington, and Commercial Streets would be required to access these Route 1 ramps. To improve mobility and access, the extension of Water Street southerly and westerly to Union Street would be proposed as well as the extension of Commercial Street southerly and westerly to Washington Street. Signalized intersections would be proposed at Centre Street intersections with Washington and Water Streets and the intersection of the extension of Water and Commercial Streets. Additional turning lanes, center islands, sidewalks, and crosswalks would be provided at these signalized intersections.

Pedestrian sidewalks would be provided along Route 1 from Middle Street to the Sagadahoc Bridge. A 20-ft. wide pedestrian tunnel located between Water and Front Streets would be proposed under Route 1, but at-grade with the downtown area. Water Street access to Route 1 from the south and north would become the Route 1 northbound and southbound ramps respectively. Vine Street would become one-way in the west direction and be part of the Route 1 southbound off-ramp lane. Front Street access to the Route 1 southbound off-ramp would permit right-turn movements only. Franklin Street access from the north and south would also permit right-turn movements onto Route 1. Access to the Bath Train Station would be relocated and provided from the Commercial Street extension. No direct access to Route 1 would be provided. Twelve foot travel lane and 5-foot paved shoulder widths would be proposed along Route 1. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street. The approximate length of Route 1 from High Street to the Sagadahoc Bridge would be 0.42 mile.

The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks.



TRAVELWAY
SHOULDERS
PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PROPERTY LINES

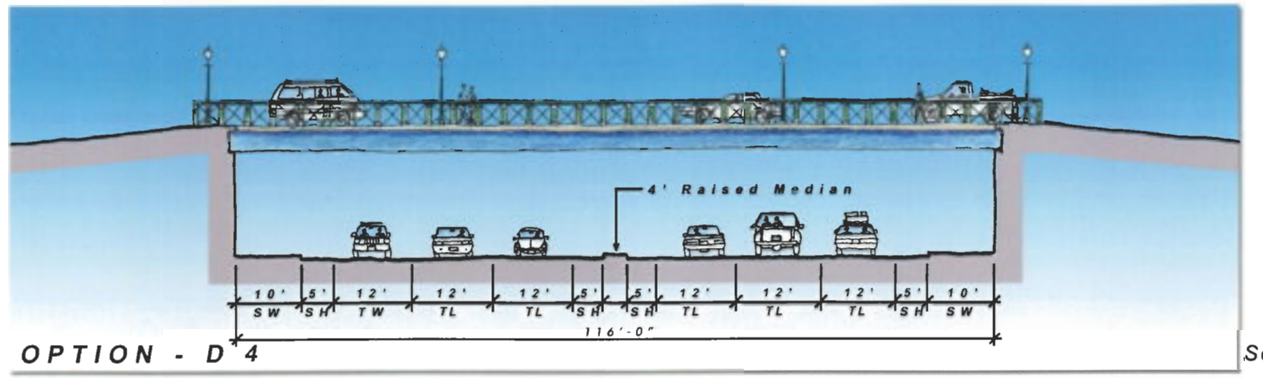
200 0 200 400
FEET

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION

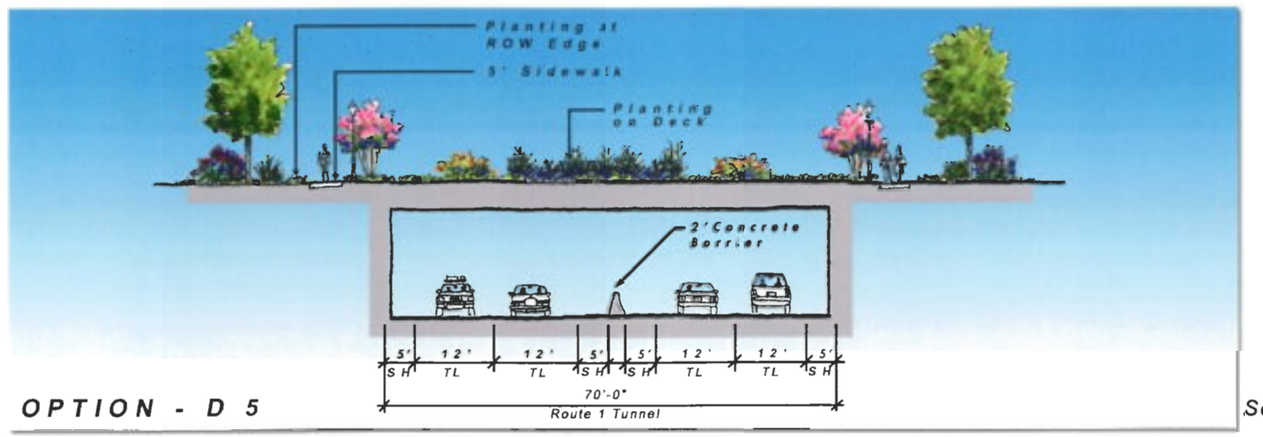
BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
OPTION D-4
FIGURE 21



OPTION - D 4

See Figure 21 for location of cross section



OPTION - D 5

See Figure 23 for location of cross section

LEGEND

SW	Sidewalk	ROW	Right-of-Way
SH	Shoulder		
TL	Travel Lanes		

BATH FEASIBILITY STUDY
Maine DOT # 10123.00

DOWNTOWN ZONE
Option D4 & D5 Cross-Sections
FIGURE 22

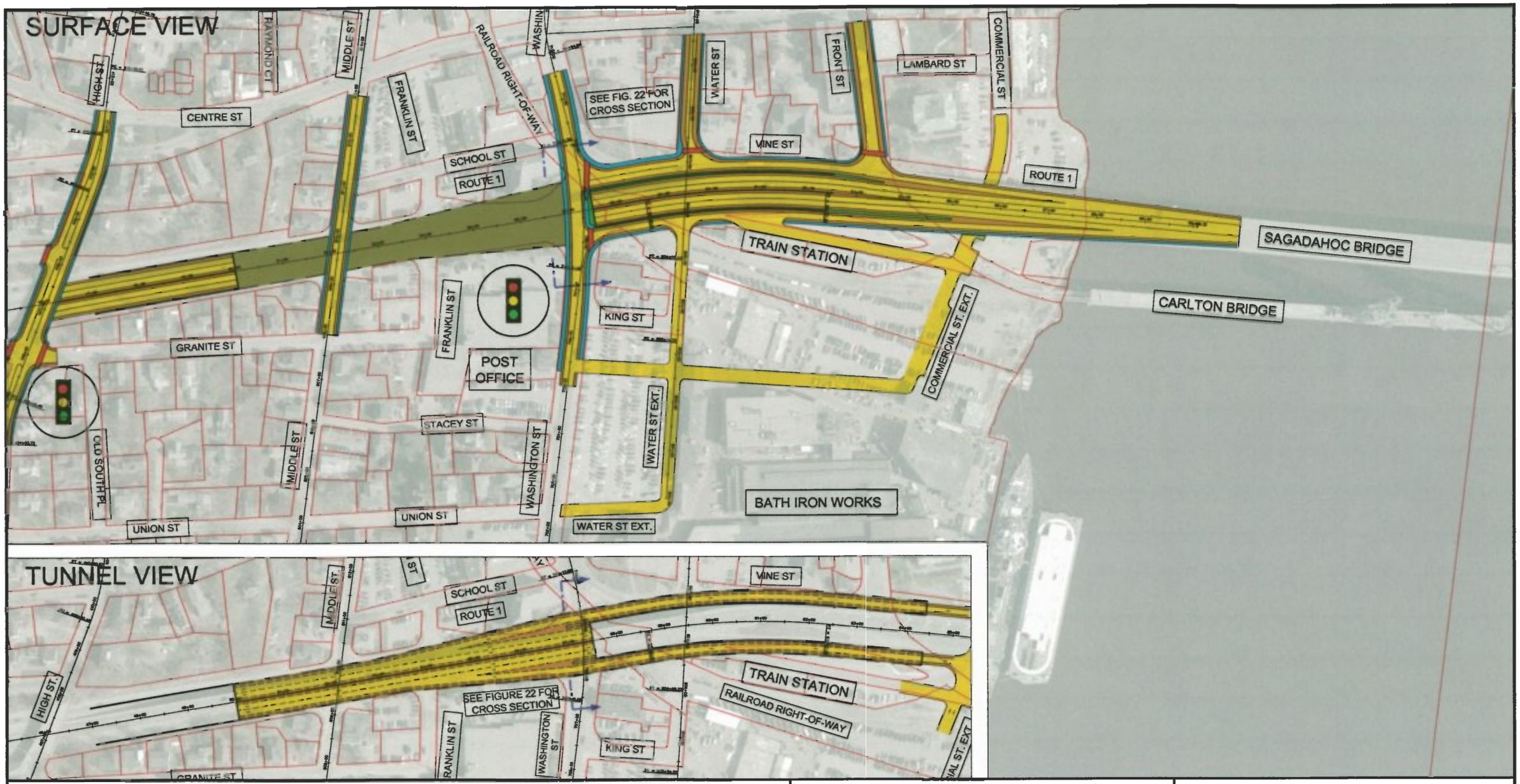
Option D-4 would create an at-grade crossing with the Rockland Branch Railroad. Relocation of the rail line would be required in order to maintain separation between Route 1 and the rail line. The railroad relocation options that were considered are presented in Section 3.4, page 54.

Widening to each side of Route 1 and Leeman Highway would be necessary resulting in property impacts. Vertical grades up to 5% were proposed along this section of Route 1, consistent with existing viaduct grades. Vertical grades associated with Middle and Washington Streets would be steeper (up to 8%) in accordance with local street standards.

Access
Access to Route 1 in this area would be from the at-grade low speed ramps at Water Street. Access to and from Route 1 northbound would be provided from Water Street to the south and Route 1 southbound access provided from Water Street to the north. The use of the local street network would be required to access these ramps. Middle Street and Washington Street would have no direct access to Route 1. Route 1 access to and from the south at High Street would be provided consistent with the C Options (see Section 3.1, page 30).

3.2.5. Option D-5

Description
Option D-5 (see Figure 23, page 49 and Figure 22, page 47) would eliminate the elevated roadway and construct a Route 1 roadway facility depressed and covered in the downtown. The Route 1 tunnel would begin west of Middle Street and end east of Washington Street. Additional ramp tunnels would extend to Commercial Street. The Route 1 tunnel would transition to surface grades between Middle and High Streets and between Washington and Front Streets. The local street crossings of Middle and Washington Streets would remain at-grade, but over the below-grade Route 1. Therefore, there would be no traffic signals on Route 1 in this area. Route 1 would consist of four-lanes with two-lanes in each direction separated by a concrete median barrier. Additional lanes would be provided in the Route 1 tunnel at the ramp areas for proper acceleration and deceleration. Full access to the downtown would be provided with this option. Access with Route 1 to the east would be provided with surface ramps that intersect with Washington Street. Access with Route 1 to the west would be provided with tunnel ramps that intersect with Commercial Street. The portals for these tunnel ramps would be located at the Sagadahoc Bridge abutment where Commercial Street crosses under the Sagadahoc Bridge and the tunnel ramps would continue directly under the surface ramps that access Route 1 to the east. The use of local streets including Water, Centre, Washington, and Commercial Streets would be required to access these Route 1 ramps. To improve mobility and access, the extension of Water Street southerly and westerly to Union Street would be proposed as well as the extension of Commercial Street southerly and westerly to Washington Street. A signalized intersection would be proposed at the Washington Street intersection with the surface ramps. Additional turning lanes, center islands, sidewalks, and crosswalks would be provided at this signalized intersection. Pedestrian sidewalks would be provided along the Route 1 surface ramps from Washington Street to the Sagadahoc Bridge and along the local streets. Water Street access to the Route 1 surface ramp from the south would permit right-turn movements only. Water Street to the north would



BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00

OPTION D-5

FIGURE 23

become one-way to the north and Vine Street would become part of the Route 1 southbound off-ramp lane. Front Street access to the Route 1 southbound off-ramp would permit right-turn movements only. The land above the tunnel would be available for grass space or other uses. Franklin Street access north and south across the Route 1 tunnel would also be possible. Access to the Bath Train Station from Route 1 would allow right turn movements only. Additional access would be provided from the Commercial Street extension. Twelve foot travel lane and 5-foot paved shoulder widths would be proposed along Route 1. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street and Water Street to the north. The approximate length of Route 1 from High Street to the Sagadahoc Bridge would be 0.42 mile.

The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks.

Option D-5 would maintain a grade separated crossing with the Rockland Branch Railroad. The railroad line would continue to be at-grade with the local street network, crossing Washington Street at-grade, on the proposed bridge directly above the Route 1 tunnel. Minor realignment of Washington Street and the railroad to the west would be required in order to meet minimum vertical clearance requirements. The railroad relocation options that were considered are presented in Section 3.4, page 54.

Widening to each side of Route 1 would be necessary resulting in property impacts. Vertical grades up to 7% were proposed along this section of Route 1, consistent with design standards.

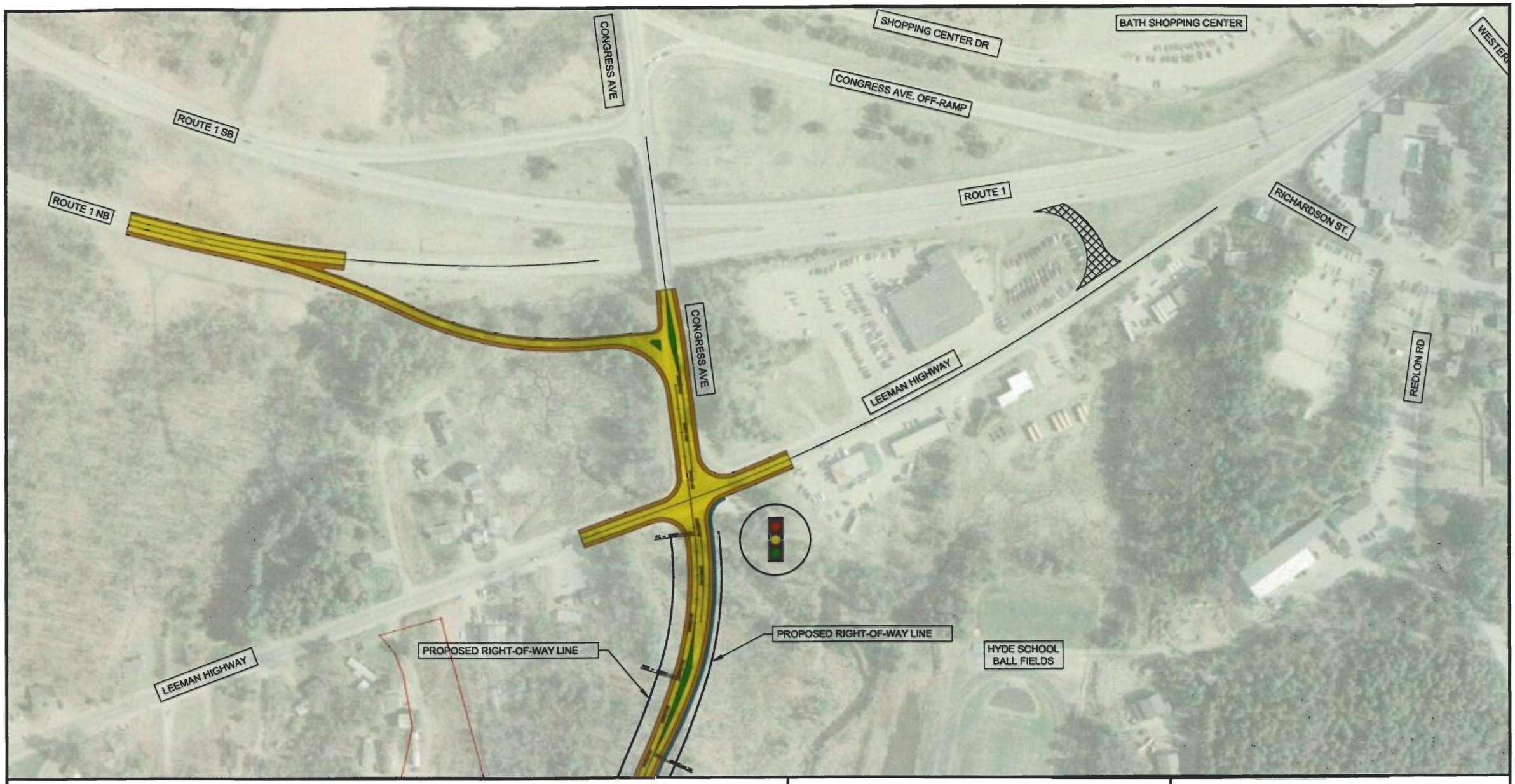
Access

Access to Route 1 in this area would be from the ramps of Route 1 as noted above. All turning movements would be allowed at the signalized intersection of Washington Street with the new on-ramp to Route 1, northbound. Right-turn movements with Water Street to the south would be permitted as described above. Middle Street would have no direct access to Route 1. Route 1 access to and from the south to High Street would be provided consistent with the C Options (see Section 3.1, page 30).

3.3 Route 209 Spur Options

Description

The Route 209 Spur Option (see Figure 24, 25, and 26, pages 51, 52, and 53) would construct a two-lane undivided roadway from Leeman Highway, in the vicinity of Congress Avenue, to Washington Street, in the vicinity of Castine Avenue. There would be a 12-foot travel lane and an 8-foot paved shoulder in each direction. A 6-ft wide sidewalk would be provided along the northern side of the proposed roadway. A new Route 1 northbound off-ramp to Congress Avenue would also be constructed, similar to Option C-3A (see Figure 16A and Figure 16B, page 36 and page 37). This new northbound off-ramp would be constructed west of Congress Avenue replacing the



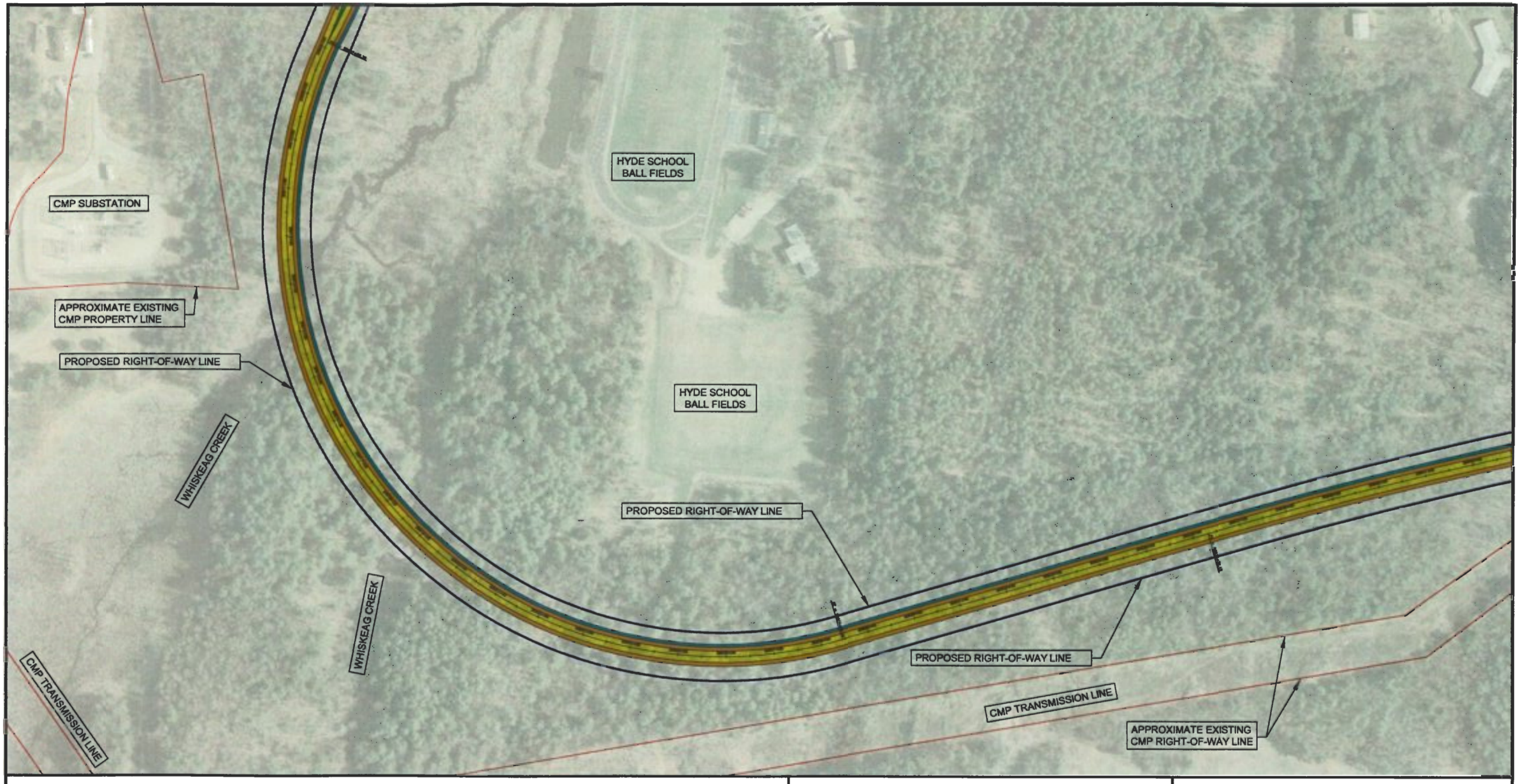
TRAVELWAY
SHOULDERS
MEDIANS/PLANTING BUFFERS
SIDEWALKS
CROSSWALKS
PAVEMENT REMOVAL

200 0 200 400
(FEET)

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION MAINE

BATH FEASIBILITY STUDY
MaineDOT PIN # 10123.00
ROUTE 209 SPUR
FIGURE 24



TRAVELWAY
SHOULDERS
MEDIANS/PLANTING BUFFERS
SIDEWALKS
CROSSWALKS

200 0 200 400
(FEET)

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION
MAINE

BATH FEASIBILITY STUDY
MaineDOT PIN # 10123.00
ROUTE 209 SPUR
FIGURE 25

TRAVELWAY
SHOULDERS
MEDIANS/PLANTING BUFFERS
SIDEWALKS
CROSSWALKS

200 0 200 400
(FEET)

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION MAINE

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
ROUTE 209 SPUR
FIGURE 26

existing ramp onto Leeman Highway.

The proposed Route 209 Spur would begin at the Congress Ave/Leeman Highway intersection, run south between an existing CMP substation to the west and the Hyde School ball fields to the east, continue easterly along an alignment north of the CMP transmission line corridor, intersect with High Street (Route 209), and continue easterly through a residential area along Pleasant Ave and Castine Ave. to its terminus at Washington Street, for a total length of 1.27 mile. The reconfiguration of several local roads in the Pleasant Ave area would be required as part of the Route 209 Spur Option. Vertical grades up to 7.5% are proposed along this section of the Route 209 spur, which is consistent with design standards.

It is important to note that the option described above is only one possible alignment for a Route 209 Spur. Additional alignment studies would be undertaken should the benefits of this new roadway warrant.

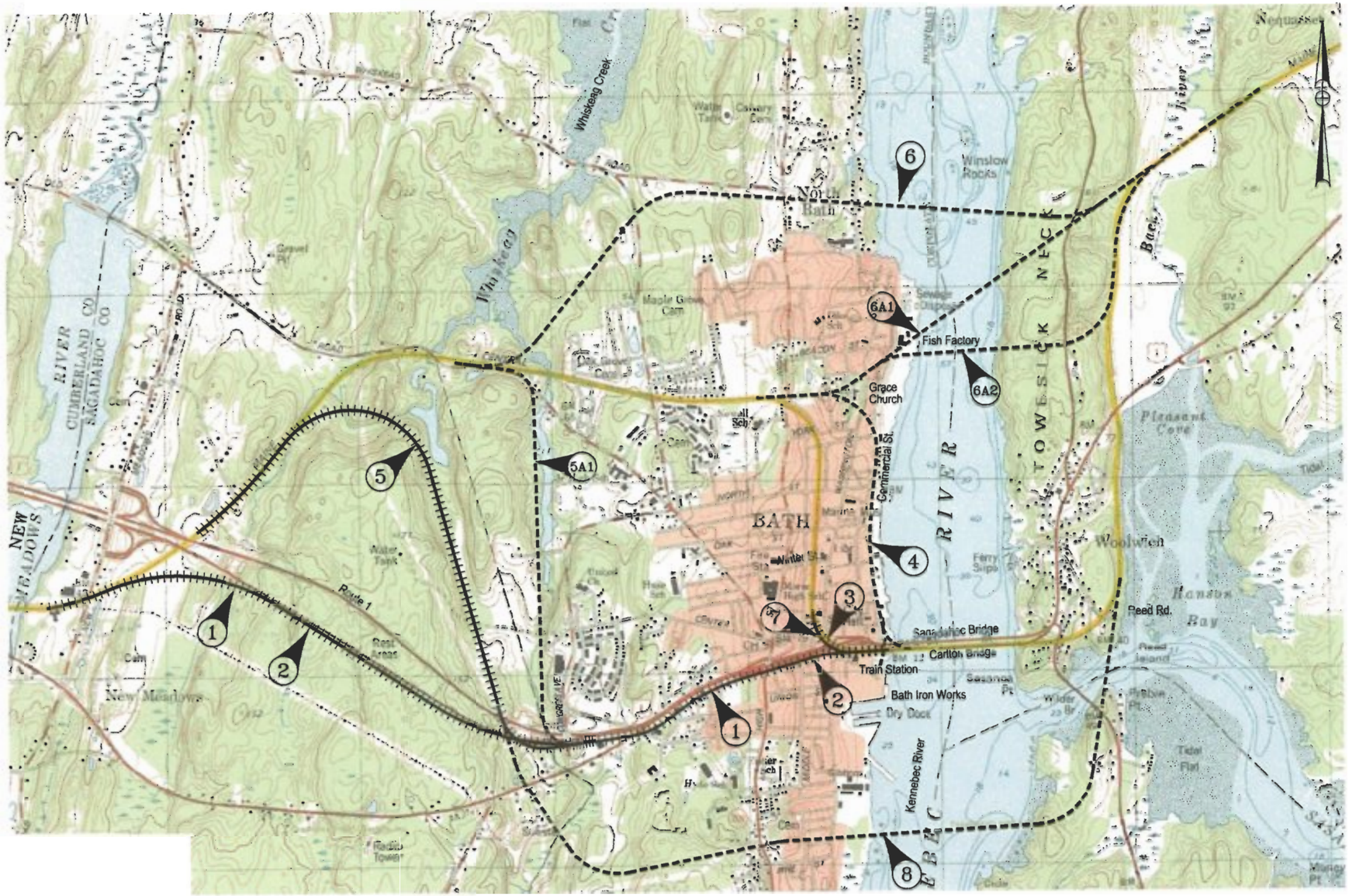
Access

The Route 209 Spur would be a limited access facility with access only provided at the Leeman Highway, High Street (Route 209), and Washington Street. Each of these three access points would be at-grade intersections: at Leeman Highway (signalized), at High Street (signalized), and at Washington Street (unsignalized). All turning movements would be allowed at these intersections. Access to the Route 209 Spur from Route 1 would be via the proposed northbound and existing southbound off-ramps to Congress Avenue.

3.4 Railroad Options

Eight basic rail alignment options, plus several variations of these, were developed for the Bath Feasibility Study. Alignments were developed to: address potential rail/roadway crossing conflicts in the Route 1 corridor; shorten the rail travel distance and travel time through the Study Area; and, be compatible with Route 1 roadway options. In consultation with the MaineDOT, the Study Team concluded that at-grade rail crossings of Route 1 would be problematic from safety and operational perspectives. Therefore, rail options were developed that were either grade-separated from Route 1, or did not cross Route 1. The options are described below and illustrated on Figure 27, page 55. Table 2, page 56 illustrates the length of new track required for the rail alignment options compared to the length of track for the existing alignment.

Existing rail facilities in the Study Area include the Rockland Branch Railroad (see Figure 2, page 4), currently used for freight movement. The existing, unused Bath Train Station is located at the west approach to the Carlton Bridge. A spur to BIW exists which provides rail service to BIW.



KEY

(1) AT-GRADE ALONG ROUTE 1

(2) VIADUCT ALONG ROUTE 1

(3) VIADUCT OVER ROUTE 1

(4) COMMERCIAL STREET

(5) AROUND THE MOUNTAIN

(5A1) AROUND THE MOUNTAIN (ALTERNATIVE 1)

(6) NORTH BATH CROSSING

(6A1) NORTH BATH CROSSING (ALTERNATIVE 1)

(6A2) NORTH BATH CROSSING (ALTERNATIVE 2)

(7) REALIGNMENT IN CITY

(8) SOUTH ALTERNATIVE

LEGEND

OPTIONS CONSIDERED & RETAINED

OPTIONS CONSIDERED & DISMISSED

EXISTING RAILROAD RIGHT-OF-WAY

NOTE:

1. BASE MAPPING TAKEN FROM U.S.G.S. TOPOGRAPHIC MAPPING DATED 1980.

2000 0 2000 4000

FEET

BATH FEASIBILITY STUDY
MaineDOT PIN # 10123.00
RAILROAD OPTIONS
FIGURE 27

Table 2 – Track Lengths (miles)

Option	New Track Distance	Existing Track Distance	Reduction in Distance	Notes
#1 – At-Grade along Route 1	2.86	3.71	0.85	From New Meadows Road to Carlton Bridge
#2 – Viaduct along Route 1	2.86	3.71	0.85	From New Meadows Road to Carlton Bridge
#3 – Viaduct over Route 1	0.47	0.47	0.00	From Winter St to Carlton Bridge
#4 –Commercial Street	1.19	1.20	0.01	From Sewell School to Carlton Bridge
#5 – Around the Mountain	2.69	2.76	0.07	From Route 1-New Meadows Interchange to Carlton Bridge
#6 – North Bath Crossing	2.54	4.50	1.96	From Whiskeag Creek To Back River crossing
#7 – Realignment in City	0.48	0.47	-0.01	From Winter St to Carlton Bridge
#8 – South Alternative	4.35	4.44	0.09	From Route 1-New Meadows Interchange to Reed Rd, Woolwich

The North Bath Crossing (Option #6) would provide the greatest reduction in track distance and thus the greatest travel time savings. Options #1 and #2 also provide notable reduction in track distance and travel time savings. The remainder of the options provide little to no reduction in track distance when compared to the existing rail line.

3.4.1. Rail Alignment – Option #1 – At-Grade along Route 1

Option #1 (see Figure 27, page 55) would follow Route 1 on its south side and would begin at the existing rail alignment south of the New Meadows Road interchange. This option would parallel Route 1 into downtown Bath and cross the Kennebec River via the Carlton Bridge on the existing rail deck. This option would require deep earth and rock cuts in some areas in order to satisfy design criteria. Access to the existing Bath Train Station and BIW would be similar to that which currently exists.

3.4.2. Rail Alignment – Option #2 – Viaduct along Route 1

Rail Alignment Option #2 (see Figure 27, page 55) would follow the same route as Option #1, but the railroad would be elevated on a viaduct in two locations, the downtown area and the Congress Avenue area, to reduce earth and rock cut requirements. This option would be elevated in the downtown area approaching the Carlton Bridge. Therefore, it would require adjustments to the Carlton Bridge, either through raising the entire structure or transferring the tracks to the upper deck of the bridge. It is important to note that the Carlton Bridge upper deck is the former roadway deck. Structural modifications are required to transfer the tracks to the upper deck. Since the tracks would now be elevated at the existing Bath Train Station and adjacent to Bath Iron Works (BIW), considerations would have to be made for accessing the Bath Train Station and BIW in this area.

3.4.3. Rail Alignment – Option #3 – Viaduct over Route 1

Rail Alignment Option #3 (see Figure 27, page 55) would preserve the existing railroad horizontal alignment as it crosses Route 1 near Washington Street. However, it would be elevated on a new viaduct over Route 1 in order to create a grade-separated crossing of Route 1. This rail option would be used in combination with Route 1 options that eliminate the Route 1 viaduct and bring Route 1 to grade. The rail viaduct also would cross over Washington and Centre Streets then transition down onto the current vertical and horizontal rail alignment. The tracks would be elevated on the Carlton Bridge similar to Rail Alignment Option #2. Compared to Rail Alignment Option #2, Option #3 would require considerably less new track (see Table 2, page 56). Access challenges to the Bath Train Station and BIW would be similar to those under Option #2.

3.4.4. Rail Alignment – Option #4 – Commercial Street

Rail Alignment Option #4 (see Figure 27, page 55) would relocate the current downtown rail alignment east to the edge of the Kennebec River and run northerly along Commercial Street to tie into the existing track north of York Street. The shift would require a new curved span off of the Carlton Bridge, near the west bank of the Kennebec River, but would permit continued use of the lower railroad deck of the bridge.

3.4.5. Rail Alignment – Option #5 & #5A1– Around the Mountain (West Bath) with At-Grade along Route 1

In order to reduce earth and rock cuts in the western portions of Rail Alignment Options #1 and #2, additional options were developed that would diverge from the existing rail in the vicinity of the New Meadows Road interchange with Route 1 and travel north around the hilly region located west of downtown Bath in West Bath. Options #5 and #5A1 (see Figure 27, page 55) would both skirt the outer edges of downtown Bath to the west and cross Route 1 near the Congress Avenue interchange. The alignments would then follow the same route as Rail Alignment Options #1 and #2 along the southerly side of Route 1 through downtown Bath and onto the Carlton Bridge.

Option #5A1 would require sharp horizontal curvature in two locations: where it would diverge from the existing track; and, where it would cross Route 1 near Congress Avenue. Option #5 lies further west of Option #5A1 in West Bath on a relatively flat vertical alignment, with gentler horizontal curves. Access to the existing Bath Train Station and BIW would be similar to that which currently exists. Of these two options, which would have similar utility, Option #5A1 was dismissed from further consideration due to sharp horizontal curvature, possible impacts to the Bath Middle School in the area, and design complexities of crossing Route 1 in the area of the Congress Avenue interchange.

3.4.6. Rail Alignment – Options #6, #6A1 & #6A2 – North Bath Crossing

Rail options to bypass the majority of downtown Bath via a new route to the north were developed with three northerly options, Options #6, #6A1 and #6A2 (see Figure 27, page 55). These options would connect to the existing rail line north/northwest of downtown Bath and bypass the existing rail alignment through the downtown. Options #6A1 and #6A2 would split off in northern Bath near the Grace Church and then cross the Kennebec River via a new bridge from a location near the existing fish factory (just south

of the sewage treatment facility). Option #6 would split off of the existing alignment approximately ¾ mile west of Options #6A1 and #6A2, thereby avoiding some of the more densely developed areas of Bath. Access to downtown Bath, BIW and the Bath Train Station would be affected as the rail line would now be approximately 1½ miles from the existing Bath Train Station, downtown and BIW. Of the three options, which would have similar utility, Options #6A1 and #6A2 were dismissed from further consideration because their alignments would run through a more densely developed area than Option #6. It is also reported anecdotally that there are historic buildings in North Bath through which Options #6A1 and #6A2 would run.

3.4.7. Rail Alignment – Option #7 – Realignment in City

The Route 1 options that lower Route 1 below grade (Route 1 Options D-3 {Figure 20, page 44} and D-5 {Figure 23, page 49}) will provide opportunity to preserve most of the current rail alignment through Bath. Rail Alignment Option #7 would involve the realignment of the rail curve coming off of the Carlton Bridge to accommodate the proposed roadway tunnel design. At grade crossings would result at Washington and Centre Streets. The rail alignment would permit the continued use of the Carlton Bridge, the existing Bath Train Station, and continued rail access to BIW.

3.4.8. Rail Alignment – Option #8 – South Alternative

Rail Alignment Option #8 would extend from Rail Alignment Option #5 near its crossing of Route 1 to bypass the Route 1 corridor and traverse through southern Bath on a similar alignment to the Route 209 Spur. The proposed crossing of the Kennebec River would occur south of BIW and would require the construction of a new bridge. The new bridge design would have to accommodate river traffic and the needs of upstream businesses such as BIW and other water-dependent facilities. Additionally, a second new railroad bridge over the Hanson Bay Channel would be required. Access to Bath, BIW, and the Bath Train Station would be affected as the rail line would now be approximately ½ mile from the existing station and downtown Bath.

Chapter 4: Evaluation of Individual Options

This chapter presents the evaluation of the Route 209 Spur Option, the Railroad Options, and the Route 1 Options retained for further consideration. Chapter 4 also presents potential access management strategies for the Commercial Zone of Route 1 and multimodal considerations in the Route 1 Corridor and the region.

4.1. No Build Transportation Conditions

Traffic assignments for the PM peak hour for the year 2030 No Build condition are illustrated in Chapter 2 on Figure 3, page 10. Based on Figure 3 and analysis of the trip tables developed for the travel demand forecasting, the following observations are made about PM peak hour travel: Additional information on travel demand forecasting and traffic analysis is documented in the Bath Feasibility Study Compendium of Transportation and Engineering Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda is included in Appendix A of this report.

- Overall PM trip (not traffic) growth from 2003 to 2030 (as reflected in the number of trips in the trip table) in the Study Area is expected to be about 32%. This equates to about 1.0% per year.
- Through trips (not traffic) are expected to increase by about 50% to 60% over the next 27 years.
- Internal (both trip ends within Bath) are expected to increase by a total of about 1% over the next 27 years.
- Trips with only one trip end in Bath are expected to increase by about 15% over the next 27 years.
- The future traffic volume on Route 1 west of the Bath Viaduct is expected to increase by about 49% (860 vph) in the northbound direction and about 55% (1,120 vph) in the southbound direction.
- The future traffic volume on Route 1 along the Bath Viaduct is expected to increase by about 49% (540 vph) in the northbound direction and about 73% (660 vph) in the southbound direction.
- The future traffic volume on Route 1 on the Sagadahoc Bridge is expected to increase by about 37% (615 vph) in the northbound direction and about 53% (770 vph) in the southbound direction.

Levels of Service (LOS) on Route 1 and on other Study Area roadways will degrade due to the forecasted traffic growth. The existing LOS D on Route 1 southbound west of the Bath Viaduct during the PM peak hour will degrade to LOS E under year 2030 traffic volumes. The existing LOS E PM peak hour operation on the 2-lane Bath Viaduct will degrade to LOS F under year 2030 traffic volumes.

Levels of Service at seven key intersections in the Route 1 corridor are tabulated in Table 3, page 60. Existing Levels of Service are generally good, with the exception of the unsignalized intersection of High St. at the Route 1 northbound off-ramp, which currently operates at LOS E. Operation on some movements at this intersection, as well as at most other unsignalized intersections, will degrade to LOS F in year 2030.

Table 3 – 2003 and 2030 PM Peak Hour Levels of Service (LOS)

Intersection	Existing Traffic Control	Existing Year 2003 LOS[1]	Year 2030 No-Build LOS[1]
Congress Ave. @ Leeman Hwy.	Unsignalized	D	F
High St. @ Rte 1 NB Off-Ramp	Unsignalized	E	F
High St. @ Rte 1 SB On-Ramp	Unsignalized	A	C
Leeman Hwy. @ Middle St.	Unsignalized	A	F
Leeman Hwy. @ Washington St.	Signalized	D	E
Centre St. @ Middle St.	Unsignalized	A	F
Centre St. @ Washington St.	Signalized	C	C

[1] LOS for unsignalized intersection represents LOS on movements with poorest operations

4.2. Route 209 Spur Option

The Route 209 Spur Option described in Chapter 3, page 50, and illustrated on Figures 24, 25, and 26 on pages 51, 52, and 53, was evaluated in this study as only one possible alignment for a spur connection between Route 1 at Congress Avenue and Washington Street near BIW's South Gate. Other alignment options would need to be developed and studied if it is determined that the benefits of the Route 209 Spur warrant further study and project development.

4.2.1. Transportation Service and Safety

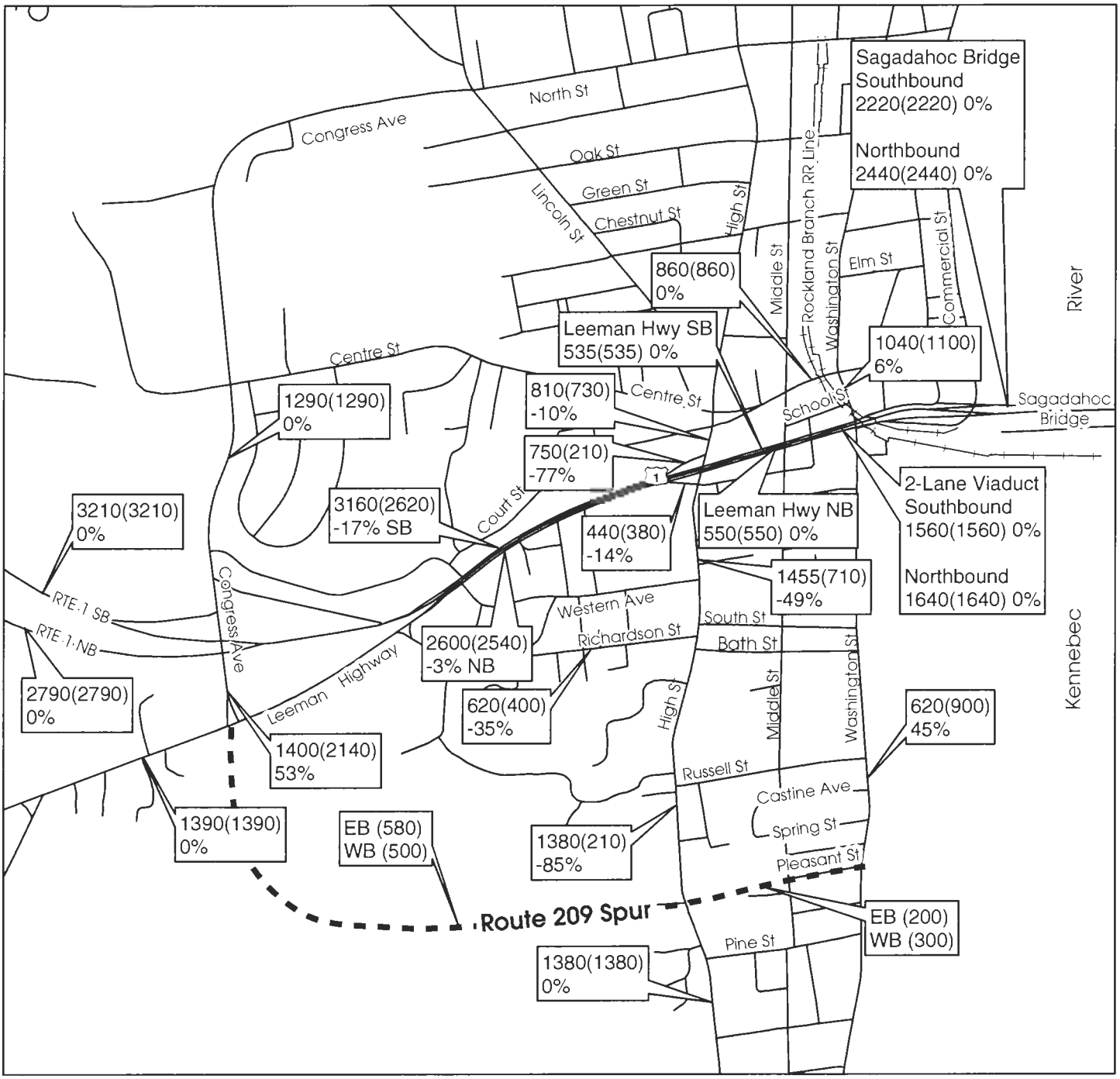
A new Route 209 Spur, from the Congress Avenue interchange with Route 1 to the Castine Avenue area of Washington Street, would have the following effects on traffic in the Study Area. Figure 28 on page 61 illustrates these traffic volumes in the Study Area.

- Reduce peak hour traffic on High Street, south of Route 1, by approximately 1,170 vph (85%)
- Reduce peak hour traffic on High Street, north of Route 1 by approximately 80 vph (10%)
- Reduce peak hour traffic on Route 1, between Congress Avenue and High Street in the Commercial Zone, by approximately 600 vph (10%)
- Have a negligible effect on Route 1 traffic, east of High Street.

The Route 209 Spur would improve regional mobility by reducing traffic volumes along Route 1 through the Commercial Zone, and it would reduce traffic volumes along High Street near Route 1. These reductions in traffic would reduce the cross section (turning lanes, but not through lanes) of some Route 1 roadway options in the Commercial Zone. The traffic reductions also may improve two high-crash locations by diverting traffic away from them: 1) the Leeman Highway on-ramp to Route 1 northbound, and 2) the High Street on-ramp to Route 1 southbound.

4.2.2. Right-of-Way

It is estimated that the Route 209 Spur Option, as shown, would require acquisition of approximately 11 acres of land and six structures. The estimated right-of-way cost in



LEGEND

xxx - No Build
(xxx) - w/Rte 209 Spur
xx% - % Change

Bath Feasibility Study
Maine DOT PIN 10123.00

Future No-Build 2030 & Route 209 Spur
Summer PM Peak Hour Forecasts

Ft
0 375 750 1,500 2,250 3,000

Figure 28

2003 dollars is $570,000, exclusive of plan preparation work and relocation costs. These values are based on a limited access right-of way, 100 feet in width from Leeman Highway to High Street and 80 feet in width from High Street to Washington Street.

4.2.3. Costs

The estimated implementation cost of the Route 209 Spur, as shown, is approximately $5 million in 2003 dollars. This includes construction, engineering, and right-of-way costs, as well as a 10% contingency for environmental mitigation and relocation costs.

4.2.4. Overall Evaluation

The study objective for the Route 209 Spur was to determine its effects on traffic conditions in the Route 1 Corridor and in the Study Area. If it is determined that advancing a Route 209 Spur for further study is warranted, several different alignments could be developed for a Route 209 Spur; each likely to have different physical effects and costs.

As described in Chapter 2, page 7, physical constraints exist at both ends of the Route 209 Spur Option considered in this study. Whiskeag Creek and associated floodplain and wetlands exist at the western end of the Route 209 Spur Option. The alignment shown traverses terrain that is generally undeveloped, providing an unfragmented wildlife habitat. At the eastern end, residential land uses predominate, some of which would be affected by a new roadway along the alignment shown. Otherwise, the Route 209 Spur corridor is unconstrained.

4.2.5. Engineering Feasibility

Based on the conceptual-level design studies completed for this study, the Route 209 Spur roadway alignment is a feasible alignment that would satisfy applicable design criteria with no unusual engineering constraints or considerations identified at this time. Development of other alternative roadway alignments that would meet applicable design criteria also appear feasible. Design objectives would be to avoid or minimize adverse impacts to residential neighborhoods, particularly in the vicinity of Washington Street and Castine Avenue, avoid or minimize adverse impacts to Whiskeag Creek and associated wetlands and floodplain, and avoid or minimize encroachment into the Hyde School property.

4.3. Railroad Options

Eight rail alignment options, plus variations, were evaluated for the Bath Feasibility Study. Alignments were developed for the purposes of: addressing potential rail/roadway crossing conflicts in the Route 1 corridor; shortening the rail travel distance and travel time through the Study Area; and, identifying rail options that are compatible with Route 1 roadway options. In consultation with the MaineDOT, the Study Team concluded that at-grade rail crossings of Route 1 would be problematic from safety and operational perspectives. Therefore, rail options were developed that were either grade-separated from Route 1, or did not cross Route 1. Rail Options #5A1, #6A1, and #6A2 were dismissed from further consideration in Chapter 3. The dismissed options will not be discussed further in Chapter 4.

The feasibility assessment and option screening occurred in three screening steps. The initial screening step evaluated general engineering feasibility, transportation service, and compatibility with community plans and general potential for impact to the natural and human environment. In the second screening step, effects on property, rail customers and potential future passenger rail, the environment, and marine traffic were considered. In the final screening step, right-of-way costs were estimated.

4.3.1. Transportation Service and Safety

Two generalized locations for the rail line were explored: 1) relocating it out of the current right-of-way (out of downtown Bath along Route 1 or to the north or south ends of the City of Bath) or 2) leaving it generally along its current right-of-way alignment (see Figure 27, page 55).

Keeping the rail line in its current alignment through the north end neighborhoods will necessitate the continued low operating speeds of trains (currently 15 mph) due to the character of the surrounding residential neighborhoods and the curvature of the tracks. The low speed through this section increases the travel time of passenger trains, thereby diminishing their time competitiveness with automobile travel. Options #3 and #7, would not reduce track distances nor increase train speeds, but would be compatible with some of the Route 1 roadway options. Options #4, #5, and #8 would not reduce track distances, but train speeds could increase on new segments up to the 60 mph design speed of the alignment. These also would be compatible with some of the Route 1 options.

Relocation of the rail line outside the current alignment has the potential to increase average train speed, making service more attractive to riders. Options #1 and #2, which would relocate the rail line along the Route 1 corridor, would reduce track distance by 0.85 miles, and increase train speeds through the new corridor up to the 60 mph design speed.

Relocation of the rail line outside of downtown Bath has the potential to increase the average train travel speed. Option #6 – North Bath Crossing, would reduce track distance by 1.96 miles and increase train speeds through the new corridor. However, this option all but eliminates the desirability of Bath as a stop for the train, especially for commuter rail service to BIW and downtown locations. Shuttle connections would need to be made to get visitors or commuters to their destination, decreasing the desirability of rail service to or from Bath.

Passenger Rail Service – Potential Travel Demand Impacts

Two primary types of passenger rail service are being considered for the Rockland Branch through Bath: 1) connecting passenger rail service to the planned extension of Amtrak service to Brunswick; and, 2) commuter rail service to BIW and downtown Bath.

Amtrak Connecting Service. The Portland North Passenger Rail Service Extension Business Plan (Draft, August 2003) for the Portland to Brunswick forecasts opening year (earliest at 2008) ridership on the Rockland Branch service of 43,500. It forecasts that this could rise to nearly double this in 2026 to 96,750 riders. It assumes that 75% of Rockland Branch riders would continue on to the Amtrak Portland to Brunswick passenger rail route. These forecasts assume the Rockland Branch service operating

for approximately six months per year, from May to October for between one and three roundtrips per day.

Commuter Rail. The approximately 6,500 employees at BIW represent a desirable market for commuter rail service. The MaineDOT performed a study of passenger rail station needs in Wiscasset (Rail Station with Park and Ride Lot: Site Evaluation Study, Stafford Business Advisors, 2002). An analysis of the zip codes of BIW employees showed that 1,000 of the employees lived north/east of the Kennebec River in a potential commuter shed for rail. Similar assumptions would estimate that upwards of 3,000 employees might live in the potential commuter shed to the south. The study also estimates that 60% of BIW employees work the day shift.

Assuming a 20% market share of potential commuters would result in 360 daily commuters from the south (3,000 x 60% x 20%) and 120 daily commuters from the north (1,000 x 60% x 20%), with average daily ridership of 960 riders per day (480 commuters x 2). Peak hour reductions on Route 1 (assuming all riders drove alone previously) would be up to 360 vehicles from the south and 120 vehicles from the north, respectively.

4.3.2. Overall Evaluation

The feasibility assessment and option screening occurred in three screening steps. Railroad Options #4 and #8 were dismissed from further consideration in the initial screening for the following reasons.

Railroad Alignment Option #4 (Figure 27, page 55) was dismissed as not feasible or prudent because its alignment along Commercial Street and the waterfront would create a barrier between downtown Bath and the west shore of the Kennebec River. This would be inconsistent with the City of Bath's Comprehensive Plan and Waterfront Master Plan. Additionally, residential displacements would be necessary where the alignment would tie back into the existing alignment north of York Street. The Steering Committee expressed concern with this option and opposition to it for the above-noted reasons. In addition, Railroad Alignment Option #4 would require a new curved span off of the Carlton Bridge lower rail deck. This would require that additional bridge piers be constructed in the Kennebec River.

Rail Alignment Option #8 (Figure 27, page 55) would bypass the Route 1 corridor and traverse through southern Bath on a similar alignment to the Route 209 Spur. The proposed crossing of the Kennebec River would occur south of BIW and would require the construction of a new bridge over the Kennebec River. The new bridge design would have to accommodate river traffic and needs of upstream businesses such as BIW and other water-dependent facilities. Additionally, a second new railroad bridge over the Hanson Bay Channel would be required. Property impacts could be substantial in the area south of BIW, which includes some high density residential and possibly historic sites. For these reasons, as well as cost and topographic challenges (deep cuts through the area west of the residential section), Option #8 was dismissed from further consideration.

In the second screening, the six remaining Railroad Options were rated with respect to specified evaluation parameters, as shown in Table 4, page 65. Options #2 and #6 rated

considerably lower than Options #1, #3, #5, and #7 and were dismissed from further consideration for the following reasons.

Table 4 - Evaluation Matrix – Railroad Options

Rail Alignment Options	Total Rating	Property Impacts	Access to Bath & Bath Train Station	Costs	Freight Access to BIW & Industry	Environ-ment	Marine Traffic
Option #1	22	1	5	3	5	3	5
Option #2	14	1	2	1	2	3	5
Option #3	23	5	2	4	2	5	5
Option #5	23	1	5	4	5	3	5
Option #6	8	2	1	1	1	2	1
Option #7	28	3	5	5	5	5	5

Ratings:
5 = Very Positive **2 = Negative**
4 = Positive **1 = Very Negative**
3 = Neutral

Rail Alignment Option #2 (Figure 27, page 55) would follow the same route as Option #1 (Figure 27, page 55) and have the same functionality, but the railroad would be elevated on a viaduct in two locations, downtown Bath and the Congress Avenue area, to reduce earth and rock cut requirements. Since Option #2 would be elevated in downtown Bath approaching the Carlton Bridge, it would require adjustments to the Carlton Bridge, either through raising the entire structure or transferring the tracks to the upper deck of the bridge, which is the former roadway deck. Structural modifications are required to transfer the tracks to the upper deck. Option #2 was dismissed from further consideration because it ranked considerably lower than Option #1 in most parameters, including its construction cost, which would be more than twice the cost of Option #1. Key considerations for Option #2 are:

- Similar to Option #1, this alignment would result in substantial impacts to homes and businesses along the south side of Route 1.
- Since the tracks would now be elevated at the existing Bath Train Station and adjacent to Bath Iron Works (BIW), considerations would have to be made for accessing the Bath Train Station and BIW in this area.
- Like Option #1, this option would be on new alignment in some areas. Other than BIW, it appears that no existing rail customers would be affected by the relocation.
- The estimated construction cost for Option #2 is approximately $36 million (in 2003 dollars), excluding right-of-way costs. Right-of-way costs were not estimated, but are expected to be similar to those of Option #1 (see Tables 5 and 6, pages 68 and 69).
- Natural resource constraints exist for Option #2 at New Meadows River, Whiskeag Creek and other wetlands, but these are not considered to adversely affect its feasibility.
- Marine traffic would not be affected with Option #2.

An option to bypass the majority of downtown Bath via a new route to the north was developed and evaluated as Option #6. Option #6 would split off of the existing alignment approximately 1 ½ miles northwest of the Carlton Bridge, thereby avoiding

some of the more densely developed areas of Bath. However, Option #6 was dismissed from further consideration because it ranked "negative" or "very negative" in every evaluation parameter, and in total, it ranked considerably lower than the other options in the Evaluation Matrix (see Table 4, page 65). Key considerations for Option #6 are:

- This alignment travels cross country with limited impacts to high density and historical areas, except in the crossing through North Bath, which has the potential to impact homes and possibly a senior citizen housing and medical services facility.
- Access to downtown Bath and Bath Train Station would be affected as the rail line would now be approximately 1 ½ miles from the existing station and downtown. Rail freight access to BIW also would be adversely affected.
- The estimated construction cost for Option #6 is approximately $28.8 million (in 2003 dollars), excluding right-of-way costs, which were not estimated for the option, but may be several million dollars (see Tables 5 and 6, pages 68 and 69).
- A new bridge would be required over the Kennebec River and moderate cuts are required on the Woolwich side of the Kennebec River. A new bridge over the Kennebec River would require further consultation with the U.S. Coast Guard.
- Natural resource constraints exist for Option #6 at Whiskeag Creek and the Kennebec River.

After two screening iterations, four Railroad Options remained, Options #1, #3, #5, and #7. Each of these would satisfy the need to provide physical separation of rail traffic from Route 1 traffic either by not crossing Route 1, or by a grade-separated crossing of Route 1. Each was retained for further evaluation of compatibility with the Route 1 roadway options. A summary of the key evaluation factors for these four options follows.

Rail Alignment Option #1 (Figure 27, page 55) would begin at the existing rail alignment south of the Route 1 New Meadows Road interchange and continue east along the south side of Route 1. Option #1 would parallel Route 1 into downtown Bath and cross the Kennebec River via the Carlton Bridge on the existing rail deck. Key considerations for Option #1 are:

- Option #1 may be able to take advantage of some existing right-of-way along Route 1 but would nonetheless result in substantial impact to residences and businesses along the south side of Route 1, including the Holiday Inn hotel (see Table 6, page 69).
- Access to the existing Bath Train Station and BIW would be similar to that which currently exists.
- In some areas, Option #1 would be on new alignment, but it appears that no existing rail customers would be affected by the relocation.
- Natural resource constraints exist for this option at New Meadows River, Whiskeag Creek and other wetlands, but these are not considered to adversely affect its feasibility.
- The total estimated cost for Option #1 is approximately $24.8 million (in 2003 dollars)(see Table 5, page 68).

Rail Alignment Option #3 (Figure 27, page 55) would preserve the existing railroad horizontal alignment as it crosses Route 1 near Washington Street. However, it would be elevated on a viaduct over Route 1 in order to create a grade-separated crossing of Route 1 to combine with Route 1 highway options that eliminate the Route 1 viaduct and bring Route 1 to grade. The tracks would be elevated on the Carlton Bridge similar to

Rail Alignment Option #2. Compared to Rail Alignment Option #2, Option #3 would require considerably less new track, approximately 2.4 less miles of track. Key considerations for Option #3 are:

- Right-of-way impacts and costs would be negligible (see Table 6, page 69).
- Access challenges to the Bath Train Station and BIW would exist because Option #3 is elevated.
- Other than as noted above, no other existing rail customers would be affected by this option because the majority of Option #3 would be on existing alignment.
- The total estimated cost for this option is approximately $20.9 million (in 2003 dollars). Right-of-way costs are estimated to be negligible because Option #3 is on the existing rail alignment (see Tables 5 and 6, pages 68 and 69).
- Natural resource constraints for Option #3 are minor and are not considered to adversely affect its feasibility.
- Marine traffic would not be affected by Option #3.

In order to reduce earth and rock cuts in the western portions of Options #1 and #2, Rail Alignment Option #5 (see Figure 27, page 55) was developed to diverge from the existing rail in the northwest and travel down around the hilly region west of downtown Bath in West Bath. Option #5 would skirt the outer edges of downtown Bath to the west and connect to Route 1 near the Congress Avenue interchange. The alignment would then follow the same route as Options #1 and #2 along the southerly side of Route 1 through downtown Bath and onto the Carlton Bridge. A new grade separated rail crossing of Route 1 would be required just west of the Congress Avenue intersection. Additionally, adjustments to the Congress Avenue interchange such as bridge widening may also be required. East of the Congress Avenue interchange, Option #5 is the same as Option #1. Key considerations for Option #5 are:

- Like Option #1, Option #5 would result in substantial impact to residences and businesses along the south side of Route 1, including the Holiday Inn hotel (see Table 6, page 69).
- Access to the existing Bath Train Station and BIW would be similar to that which currently exists.
- In some areas, this option would be on new alignment, but it appears that no existing rail customers would be affected by the relocation.
- The total estimated cost for Option #5 is approximately $21.7 million (in 2003 dollars) (see Table 5, page 68).
- Earth and rock cuts would be less than Option #1.
- Natural resource constraints exist for Option #5 at Whiskeag Creek and other wetlands, but these are not considered to adversely affect its feasibility.
- Marine traffic would not be affected by this option.

Rail Alignment Option #7 would involve the realignment of the rail curve on the west approach to the Carlton Bridge, and the rail line would remain at-grade. Key considerations for Option #7 are:

- Moderate impact to residences and businesses compared to other rail options (see Table 6, page 69).
- Preserves use of existing track, thereby minimizing overall costs.
- Access to the existing Bath Train Station and BIW would be similar to that which currently exists.
- No existing rail customers would be adversely affected by Option #7.

- The total estimated cost for Option #7 is approximately $2.9 million (in 2003 dollars) (see Table 5, page 68).
- Minimal earthwork would be required.
- There are no apparent natural resource constraints, except for work in the floodplain.
- Marine traffic would not be affected by this option.

4.3.3. Costs

The estimated implementation costs (in 2003 dollars) of the six Rail Alignment Options that continued to the second screening are summarized in Table 5. These costs include construction, engineering, and right-of-way (except Option #6, whose right-of-way costs were not estimated). Option #7 is by far the least expensive option at $2.9 million. Option #2 is the most expensive option at $47.3 million. Option #6 is the second most expensive option at $31.7 million plus right-of-way costs. Option #1 is the third most expensive option at $24.8 million. Options #3 and #5 are comparable in cost at $20.9 million and $21.7 million, respectively.

Table 5 – Estimated Costs – Railroad Options

Rail Alignment Option	Construction & Engineering Costs	Right-of-Way Costs	Contingency [1]	Total Estimated Costs (2003 dollars)
#1-At-Grade along Route 1	$15.5 m	$7.04 m	$2.25 m	$24.8 m
#2-Viaduct along Route 1	$36 m	similar to Option #1	$4.3 m	$47.3 m
#3–Viaduct over Route 1	$19 m	negligible	$1.9 m	$20.9 m
#5–Around the Mountain	$12.7 m	$7.03 m	$1.97 m	$21.7 m
#6-North Bath Crossing	$28.8 m	not estimated[2]	$2.88 m	$31.7 m plus ROW
#7–Realignment in City	$800,000	$1.85 m	$0.27 m	$2.9 m

[1] 10% contingency for ROW plan preparation, relocation costs, and environmental mitigation costs

[2] Option #6 was dismissed before ROW costs were estimated, but ROW costs are expected to be several million dollars.

m = million

4.3.4. Right-of-Way

Right-of-way impacts were estimated for the four railroad options that continued to the third screening and are tabulated in Table 6, page 69. These estimates are based on a right-of way width of 50 feet. Rail Alignment Options #1 and #5 are comparable in the level of right-of-way impact that would occur. Both options would run parallel to Route 1 on its south side in the Downtown and Commercial Zones. Options #1 and #5 would affect many residential and business properties and result in the greatest right-of-way impact and cost of land acquisition of the Rail Alignment Options. In contrast, Rail

Alignment Option #3 would affect no structures and have negligible right-of-way impacts and costs because it would run along the existing railroad right-of-way. Rail Alignment Option #7 would affect five structures and require approximately 0.91 acres of land.

Table 6 – Estimated Right-of-Way Impacts – Railroad Options

Rail Alignment Option	Estimated Number of Structures to be Acquired	Estimated Land Area to be Acquired in Acres	Estimated ROW Cost (2003 dollars)[1]
#1 – At-Grade along Route 1	19	13.34	$7,040,000
#3 – Viaduct over Route 1	none	negligible	negligible
#5 – Around the Mountain	19	12.99	$7,030,000
#7 – Realignment in City	5	0.91	$1,850,000

[1] Excludes ROW plan preparation and relocation costs

4.3.5. Engineering Feasibility

Based on the conceptual-level design completed for this study, Rail Alignment Options #1, #3, #5, and #7 are feasible alignments that would satisfy applicable design criteria. A number of important constraints and design considerations would need to be overcome in design development for Options #1 and #5, which both relocate the rail to run parallel to Route 1. These constraints are the developed properties that exist along the south side of Route 1 and the considerable rock and earth excavation necessary to meet track grade requirements. These constraints increase the costs of these two alternatives substantially. An important design consideration with Option #3 would be the work necessary on the Carlton Bridge to raise the existing track to the upper deck (former roadway deck). While this appears to be feasible, additional detailed design studies would be necessary. There does not appear to be any unusual constraints to design and construction of Option #7.

Rail Alignment Options #1, #3, #5, and #7 meet some of the transportation goals of the Feasibility Study Purpose Statement. Each would provide a railroad option that would be compatible with one or more of the Route 1 roadway options. Only Rail Alignment Option #1 would reduce track distance and therefore reduce travel times. However, additional coordination with the City of Bath is necessary to determine these options' consistency with community objectives with respect to land use and livability along the Route 1 corridor.

Additional study also is needed to weigh the cost of these railroad options against the transportation benefits achieved.

4.4. Route 1 Options

Three highway improvement options, plus a fourth variation, Route 1 Option C-1 w/ Crossover, were developed for Route 1 in the Commercial Zone, which is defined for purposes of this study as the section of Route 1 from Congress Avenue to High Street. Options in the Commercial Zone are designated with the prefix "C." Five highway improvement options were developed for Route 1 in the Downtown Zone, which is

defined for purposes of this study as the section of Route 1 from High Street to the Sagadahoc Bridge. Options in the Downtown Zone are designated with the prefix "D." All improvement options in the Commercial Zone are compatible with all options in the Downtown Zone, and by combining options from each Zone, improvements are provided for the entire Route 1 Study Corridor. Since they cover separate sections of Route 1, "C" options are not compared to "D" options.

Additional information is documented in the Bath Feasibility Study Compendium of Transportation and Engineering Technical Memoranda, which is bound separately from this report. A listing of all Technical Memoranda is included in Appendix A of this report.

4.4.1. Transportation Service and Safety

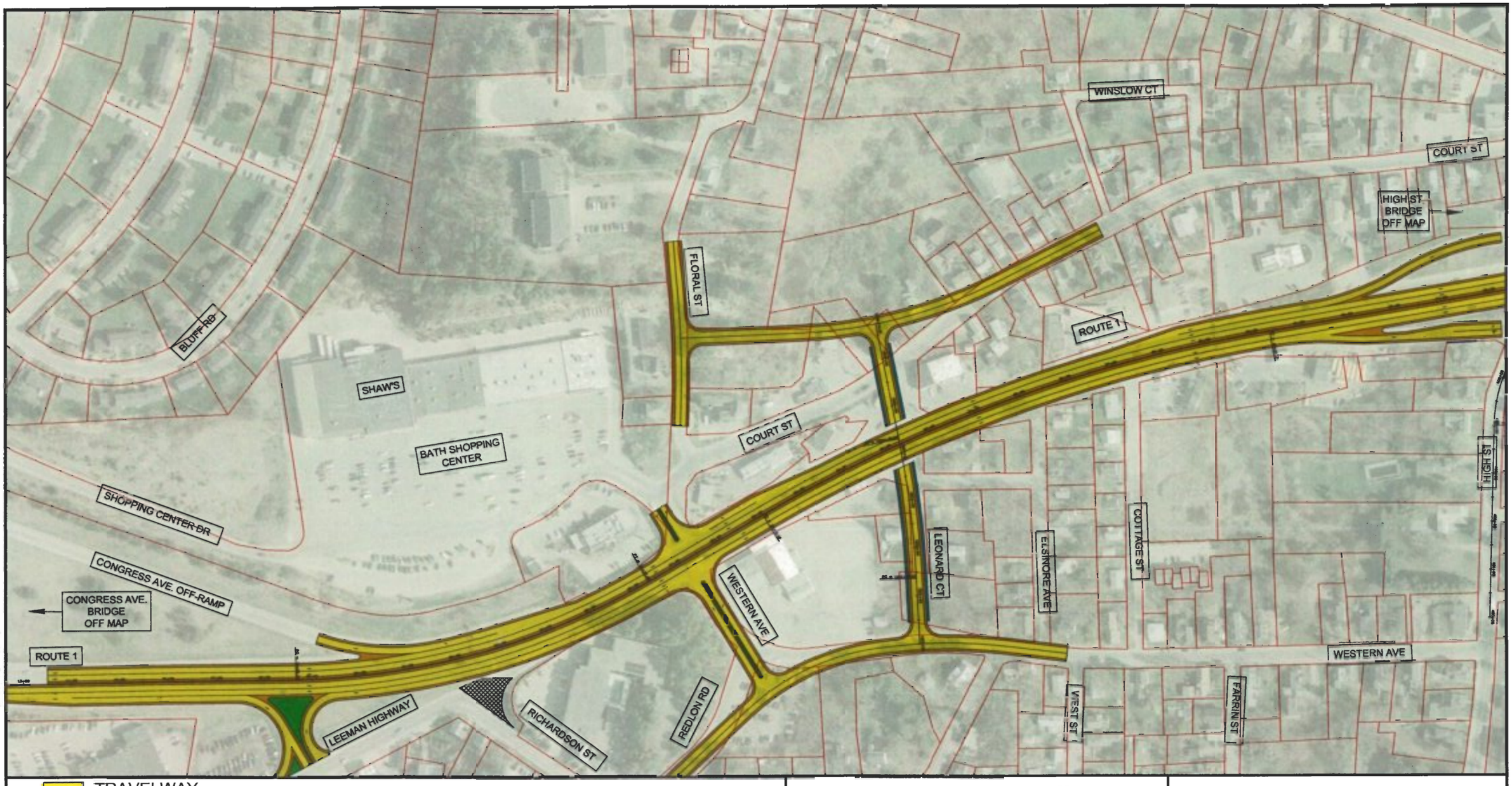
"C" Options

The fundamental difference among the "C" Options with respect to transportation service is the degree of access provided to abutting land uses and the degree of access provided across Route 1 between the north and south sides. Option C-1 maintains a high degree of regional mobility with no stops required, but does not provide pedestrian or vehicular access across Route 1. Option C-2 compromises some degree of regional mobility for enhanced local accessibility (both vehicular and pedestrian) with provision of traffic signal control at the intersection of Route 1 with the Bath Shopping Center driveway and Western Avenue. Option C-3A maximizes both regional mobility and local accessibility by separating through traffic from local traffic with frontage roads. Option C-3A should also enhance traffic safety by separating traffic that is traveling at different speeds.

A variation of Option C-1 was developed as a less-costly alternative to Option C-3A which would still provide for vehicular and pedestrian crossings of Route 1 and would provide for uninterrupted flow on Route 1. This option, known as Option C-1 w/Crossover, is shown on Figure 29, page 71. Option C-1 w/Crossover would extend Leonard Court from Western Avenue on the south side of Route 1, to a realigned Court St. on the north side of Route 1 via an underpass of Route 1.

With Option C-1, access to abutting land uses would remain largely unchanged. A raised median would be provided thereby preventing left turns into or out of Bath Shopping Center driveway, Western Avenue, and other existing driveways. Sidewalks would be provided along both sides of Route 1, but pedestrian access across Route 1 would be prohibited. Option C-1 w/Crossover would provide for vehicular and pedestrian movements across Route 1, thus enhancing north-south linkages and economic vitality of roadside businesses. Option C-2 would provide traffic signal control at the intersection of Route 1 with the Bath Shopping Center driveway and Western Avenue, thus allowing for all turning movements here, as well as providing for pedestrian access across Route 1. Option C-3A provides for two frontage streets parallel to Route 1, from which all movements into and out of abutting land uses would occur. Sidewalks would be provided along the frontage streets, and pedestrian access across the depressed Route 1 would be provided above Route 1.

For Options C-1, C-1 w/Crossover, and C-3A, which would not have traffic signals along Route 1, year 2030 traffic Levels of Service (LOS) along this section of Route 1 would generally be acceptable, at LOS D or better with improved shoulders and access



BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00

OPTION C-1 w/CROSSOVER

FIGURE 29

management. Level of Service for Option C-2 would be controlled by the proposed traffic signal at the Bath Shopping Center driveway. In order to provide LOS D or better at this intersection in the year 2030, additional approach lanes would be required both northbound and southbound on Route 1. The number of approach lanes could be reduced if the Route 209 Spur were implemented.

"D" Options

The fundamental difference among the "D" Options is the juxtaposition of Route 1 regional traffic with local traffic. Currently, Route 1 in the Downtown Zone is on an elevated viaduct separated from local traffic. While this enhances regional mobility, it hinders local accessibility. Four of the five "D" Options maintain the separation of regional and local traffic. One option, Option D-2, mixes regional and local traffic with an at-grade Route 1 design. However, all of the "D" Options would improve accessibility to downtown Bath, through ramps, frontage roads, or at-grade intersections. In addition, each of the "D" Options has been designed to improve north-south connectivity across the Route 1 Corridor, for both pedestrian and vehicular traffic. As described in Chapter 3, in some cases this is accomplished with at-grade crossings; in other cases, bridges and pedestrian tunnels are used.

With the lane configurations proposed for each option, acceptable LOS D or better operation would be achieved under year 2030 PM peak hour traffic volumes by each of the "D" Options.

4.4.2. Right-of-Way

"C" Options

Right-of-Way impacts were estimated for the Route 1 "C" Options and are tabulated in Table 7. Options C-1 and C-2 would have nominal right-of-way impacts, each affecting one existing structure and requiring acquisition of 0.16 and 0.32 acres, respectively. The estimated right-of-way costs are $80,000 for Option C-1 and $110,000 for Option C-2. In contrast, Option C-3A would require acquisition of 10 existing structures and approximately 1 ¼ acres of land. Estimated acquisition cost is $1.1 million. Option C-1 w/Crossover would affect seven structures and require acquisition of 1.68 acres of land. Estimated acquisition cost is $430,000.

Table 7 – Estimated Right-of-Way Impacts – Route 1 "C" Options

Option	Estimated Number of Structures to be Acquired	Estimated Land Area to be Acquired in Acres	Estimated ROW Costs (2003 dollars)[1]
Option C-1	1	0.16483	$80,000
Option C-2	1	0.32905	$110,000
Option C-3A	10	1.26104	$1,100,000
Option C-1 w/Crossover	7	1.67565	$430,000

[1] Excludes ROW plan preparation and relocation costs

"D" Options

Right-of-Way impacts were estimated for the five Route 1 "D" Options and are tabulated in Table 8, page 73. In general, the greatest right-of-way impacts and costs would result from Options D-1 and D-2, which are comparable in terms of right-of-way impact. The lowest right-of-way impacts and costs would result from Options D-3, D-4, and D-5, which are comparable in their right-of-way impacts.

Table 8 – Estimated Right-of-Way Impacts – Route 1 "D" Options

Option	Estimated Number of Structures to be Acquired	Estimated Land Area to be Acquired in Acres	Estimated ROW Costs (2003 dollars)[1]
Option D-1	9	0.91	$1,390,000
Option D-2	8	0.87	$1,340,000
Option D-3	4	0.64	$770,000
Option D-4	5	0.39	$860,000
Option D-5	4	0.29	$780,000

[1] Excludes ROW plan preparation and relocation costs

4.4.3. Costs

"C" Options

The estimated implementation costs (in 2003 dollars) for the Route 1 "C" Options are summarized in Table 9. These costs include construction, engineering, and right-of-way. Option C-3A is by far the most expensive option at approximately $16.9 million. Options C-1 and C-3A are comparable in cost, at approximately $4.28 and $4.74 million, respectively. The estimated cost of Option C-1 w/Crossover is $6.85 million.

Table 9 – Estimated Costs – Route 1 "C" Options

Option	Construction & Engineering Costs	Right-of-Way Costs	Contingency [1]	Total Estimated Costs (2003 dollars)
Option C-1	$3.8 m	$0.08 m	$0.4 m	$4.28 m
Option C-2	$4.2 m	$0.11 m	$0.43 m	$4.74 m
Option C-3A	$14.3 m	$1.1 m	$1.5 m	$16.9 m
Option C-1 w/ crossover	$5.8 m	$0.43 m	$0.62 m	$6.85 m

[1] 10% contingency for ROW plan preparation, relocation costs, and environmental mitigation costs
m = million

"D" Options

The estimated implementation costs (in 2003 dollars) for the Route 1 "D" Options are summarized in Table 10, page 74. These costs include construction, engineering, and right-of-way. Option D-5 is by far the most expensive option at approximately $77.89 million. Option D-2 is the lowest cost option at $13.37 million.

Table 10 – Estimated Costs – Route 1 "D" Options

Option	Construction & Engineering Costs	Right-of-Way Costs	Contingency [1]	Total Estimated Costs (2003 dollars)
Option D-1	$32.46 m	$1.39 m	$3.39 m	$37.24 m
Option D-2	$10.81 m	$1.34 m	$1.22 m	$13.37 m
Option D-3	$17.7 m	$0.77 m	$1.85 m	$20.32 m
Option D-4	$13.84 m	$0.86 m	$1.47 m	$16.17 m
Option D-5	$70.03 m	$0.78 m	$7.08 m	$77.89 m

[1] 10% contingency for ROW plan preparation, relocation costs, and environmental mitigation costs
m = million

4.4.4. Overall Evaluation

The feasibility assessment of the Route 1 Options considered engineering and transportation issues, as well as numerous goals and objectives established at the outset of the study with input from the community. The goals and objectives were consolidated into 14 Evaluation Parameters against which options in both the Commercial and Downtown Zones would be evaluated. Four "Favorable criteria" were identified for each Evaluation Parameter. If an option satisfied a "Favorable criterion" then it would get a "point" in its rating. Therefore, if all Evaluation Parameters are applicable, a maximum rating of 56 points is possible. A tabulation of the Evaluation Parameters and the four Favorable Criteria for each parameter is presented in Table 11, page 75. Since they cover separate sections of Route 1, "C" options are not comparable to "D" options.

During the course of the study, the Study Team developed graphical renderings of selected highway options to assist the Steering Committee in visualizing and assessing the options with respect to aesthetics and context. Examples of these renderings for Options C-1 and C-2 are illustrated on Figure 30, page 78, and Figure 31, page 79, respectively. Examples of these renderings for Options D-1, D-4 (w/rail on bridge), and D-4 (w/rail at-grade) are illustrated on Figure 32, page 81, Figure 33, page 82, and Figure 34, page 83, respectively.

"C" Options

Table 12, page 76 is the evaluation matrix for the Route 1 "C" options. Two evaluation parameters, "Cultural and Historic Preservation" and "Railroad Operation and Safety," are not applicable to the "C" Options. Therefore, a maximum rating of 48 points is possible for the "C" Options.

The purpose of the evaluation matrix ratings is to determine if any of the Route 1 "C" Options stand out as substantially better or worse than any of the other options. For purposes of the numeric ratings, each Evaluation Parameter is weighted equally. However, in the final analysis and selection of the options that would advance further to future studies, some parameters have a stronger influence on feasibility than others.

Table 11 - Favorable Criteria Used in Rating The Options

Aesthetics • Route 1 highway elements can be designed to match the scale, quality, and character of the adjacent context • Establishes a gateway for Bath • Visual quality of adjacent development will improve • Provides buffer opportunities	**Community Visibility** • Maximizes intuitive wayfinding • Promotes community identity • Improves visibility of community resources before Route 1 exit points (especially northbound) • Unobtrusive impact on community character and scale	**Cost Considerations** • Benefits consistent with costs • Consistent with typical infrastructure improvement costs • Fundable within reasonable timeframe • Construction can be phased	**Cultural and Historic Preservation** • Avoids cultural and historic resources • Meets Bath downtown and waterfront Master Plan objectives • Meets Bath Comprehensive Plan objectives • Maximizes views and connectivity to downtown/historic Bath
Economic Vitality • Supports Bath as a destination (visibility and wayfinding) • Preserves or improves accessibility to major employers, downtown, and recreational destinations • Has minimal impact on adjacent businesses • Creates opportunities for new development	**Local Accessibility** • Connects Route 1 to waterfront • Connects Route 1 to downtown Bath/historic district • Provides appropriate access management • Minimal impact on local street network	**Natural Resources** • Minimizes potential impact to wetland and water resources • Minimizes potential impact to threatened and endangered species • Minimizes potential impacts to wildlife habitats • Resources present do not pose a high level of constraint to project development	**North-South Linkage (across Rte. 1 Corridor)** • Provides appropriate number, location and quality of traffic movements • Provides appropriate number, locations and quality of pedestrian movements • Provides design opportunities to reduce the psychological barrier of the existing corridor • Maintains existing city street grid
Pedestrian/Bicycle Accommodation • Provides continuous, safe pedestrian and bicycle accommodations along the Route 1 Corridor linking to the Sagadahoc Br. (west-east) • Provides safe pedestrian and bicycle accommodations across the Route 1 Corridor (south-north) at appropriate locations • Allows for local connections to downtown and waterfront • Provides opportunity for linkage to the existing multi-use path	**Property Impacts** • Impacts to properties minimized • Minimizes displacements • Avoids acquisition of historic/cultural properties • Minimizes acquisition of viable businesses	**Railroad Operations & Safety** • Satisfies design standards and guidelines • Minimizes vehicular/train conflicts • Accommodates passenger and freight traffic and is compatible with existing station location • Does not require relocation of rail line	**Regional Mobility** • Reduces traffic delay through Study Area • Minimizes number of stops for Route1 through traffic • Minimizes local traffic impedance • Provides regional multimodal options
Social and Community Resources • Potential for impact to resources is minimized • Resources present do not pose a high level of constraint to project development • Promotes community cohesion • Enhances visibility of community resources	**Transportation Service & Safety** • Provides acceptable Levels of Service on Route 1 • Improves High Crash Locations • Satisfies design standards and guidelines • Provides acceptable Levels of Service on city streets		

Options C-1 and C-1 w/Crossover: Both of these options rate highly and do not appear at this level of study to have any "fatal flaws" that would render either one infeasible. There are two primary differences between the two options: 1) Option C-1 does not provide for north-south pedestrian or vehicular movements, while Option C-1 w/Crossover does, and 2) Option C-1 w/Crossover will have greater property impacts than Option C-1.

Option C-2: Although Option C-2 rates comparably to Options C-1 and C-1 w/Crossover, it would create an at-grade, 4-way signalized intersection on a section of Route 1 that is currently controlled access. Unless MaineDOT determines that a break in controlled access here is appropriate, the at-grade, 4-way intersection is considered a "fatal flaw" of Option C-2

Table 12 – Evaluation Matrix – Route 1 "C" Options

	Option C-1	Option C-1 w/Crossover	Option C-2	Option C-3A	Access Management Option	No Build Option
Total Rating	***33***	***36***	***33***	***28***	***23***	***22***
Aesthetics	3	3	3	1	0	0
Community Visibility	0	0	3	0	0	0
Cost Considerations	4	4	4	1	4	4
Cultural & Historic Preservation	N/A	N/A	N/A	N/A	N/A	N/A
Economic Vitality	2	3	3	2	1	2
Local Accessibility	4	4	3	4	4	3
Natural Resources	4	4	4	4	4	4
North - South Linkage	1	4	4	3	1	1
Pedestrian/ Bicycle Accommodation	3	4	4	4	0	0
Property Impacts	4	1	1	1	3	4
Railroad Operations & Safety	N/A	N/A	N/A	N/A	N/A	N/A
Regional Mobility	3	3	0	3	3	1
Social and Comm-unity Resources	2	3	2	2	2	2
Transportation Service & Safety	3	3	2	3	1	1

Ratings presume each Evaluation Parameter is of equal importance.

Ratings: (see Table 11, page 75 for criteria)
0 = Meets NONE of the established criteria
1 = Meets only ONE of the established criteria
2 = Meets only TWO of the established criteria
3 = Meets only THREE of the established criteria
4 = Meets all FOUR of the established criteria
N/A = Not applicable

Option C-3A: Options C-1, C-1 w/Crossover, and C-2 all rate within three points of one another, ranging from 33 to 36 points. At 28 points, Option C-3A rates five points lower than the lowest rated option of the top three options. Important considerations for Option C-3A are its high cost and high level of property impact, compared to the other "C" Options. Option C-3A has a distinct advantage over Options C-1 and C-2 in that C-3A maintains a high level of regional mobility and provides for local accessibility, as well.

However, a lower cost option, Option C-1 w/Crossover, would provide the same mobility and accessibility functions at a lower cost.

"D" Options

Table 13, page 80 is the evaluation matrix for the Route 1 "D" Options. All Evaluation Parameters apply; therefore, a maximum rating of 56 points is possible for the "D" Options.

The purpose of the evaluation matrix ratings is to determine if any of the Route 1 "D" Options stand out as substantially better or worse than any of the other options. For purposes of the numeric ratings, each Evaluation Parameter is weighted equally. However, in the final analysis and selection of the options that would advance further to future studies, some parameters have a stronger influence on feasibility than others. Based on the ratings, the "D" Options can be placed into two groups: those rated at 30 points or below (Options D-2, D-3, and D-5); and those rated at 35 points or above (Options D-1 and D-4). It is important to note that all of the "D" Options would rate poorly with respect to property impacts.

Option D-1: This option rates highly (35 points) and does not appear at this level of study to have any "fatal flaws" that would render it infeasible. It is the second highest cost option, but its benefits are deemed consistent with its cost. Option D-1 rates highly in every transportation parameter, including regional mobility, local accessibility, north-south linkage, and transportation service and safety. It rated poorly in several parameters important to the community including aesthetics and community visibility.

Option D-2: At 29 points, Option D-2 rated the lowest of the "D" Options. It did not rate highly in any individual Evaluation Parameter, and it rated poorly in several important parameters such as aesthetics, regional mobility, and transportation service and safety. In addition, Option D-2 would create an at-grade signalized intersection on a section of Route 1 that is currently controlled access.

Option D-3: Option D-3, which would locate Route 1 in a depressed corridor below grade rated among the lowest of the "D" options at 30 points. Although it rated highly in important parameters such as regional mobility and local accessibility, it rated poorly in three important parameters reflective of local goals – aesthetics, community visibility, and north-south linkage.

Option D-4: At 40 points, Option D-4 is the highest rated of the five "D" Options, primarily because it provides the transportation benefits of Option D-1 with a modified at-grade design that preserves Route 1's regional mobility, and because it improves aesthetics and community visibility by its at-grade design.

Before

After

Looking east along Route 1 near the Bath Shopping Center driveway

Bath Feasibility Study
Maine DOT PIN 10123.00

Rendering Option C-1

Figure 30

Before

After

Looking east along Route 1 near the Bath Shopping Center driveway

Bath Feasibility Study
Maine DOT PIN 10123.00

Rendering Option C-2

Figure 31

Table 13 – Evaluation Matrix – Route 1 "D" Options

	Option D-1	Option D-2	Option D-3	Option D-4	Option D-5	No Build Option
Total Rating	***35***	***29***	***30***	***40***	***30***	***31***
Aesthetics	0	0	0	4	1	0
Community Visibility	0	2	0	3	1	0
Costs	1	2	3	2	0	4
Cultural & Historic Preservation	1	3	4	4	1	1
Economic Vitality	3	3	3	2	2	2
Local Accessibility	4	3	3	2	4	3
Natural Resources	4	2	3	2	3	4
North - South Linkage	4	2	0	3	2	2
Pedestrian/ Bicycle Accommodation	4	3	2	4	3	3
Property Impacts	1	1	1	1	1	4
Railroad Operation & Safety	4	3	2	3	2	3
Regional Mobility	4	1	4	4	4	3
Social and Community Resources	2	3	2	3	3	2
Transportation Service & Safety	3	1	3	3	3	0

Ratings presume each Evaluation Parameter is of equal importance.

Ratings: (see Table 11, page 75 for criteria)
0 = Meets NONE of the established criteria
1 = Meets only ONE of the established criteria
2 = Meets only TWO of the established criteria
3 = Meets only THREE of the established criteria
4 = Meets all FOUR of the established criteria

Option D-5: Option D-5, which would locate Route 1 in a tunnel rates among the lowest options at 30 points. It has a number of negative attributes which render it not prudent. At nearly $78 million, it would be more than twice as costly as the next most expensive option (Option D-1 at $37.24 million) and nearly six times as expensive as the least expensive option (Option D-2 at $13.37 million). Although it ranked highly in important parameters such as regional mobility and local accessibility, expenditure of this high cost is deemed not prudent for the benefits achieved, especially since it ranked poorly in two important parameters reflective of local goals – aesthetics and community visibility.

Before

After

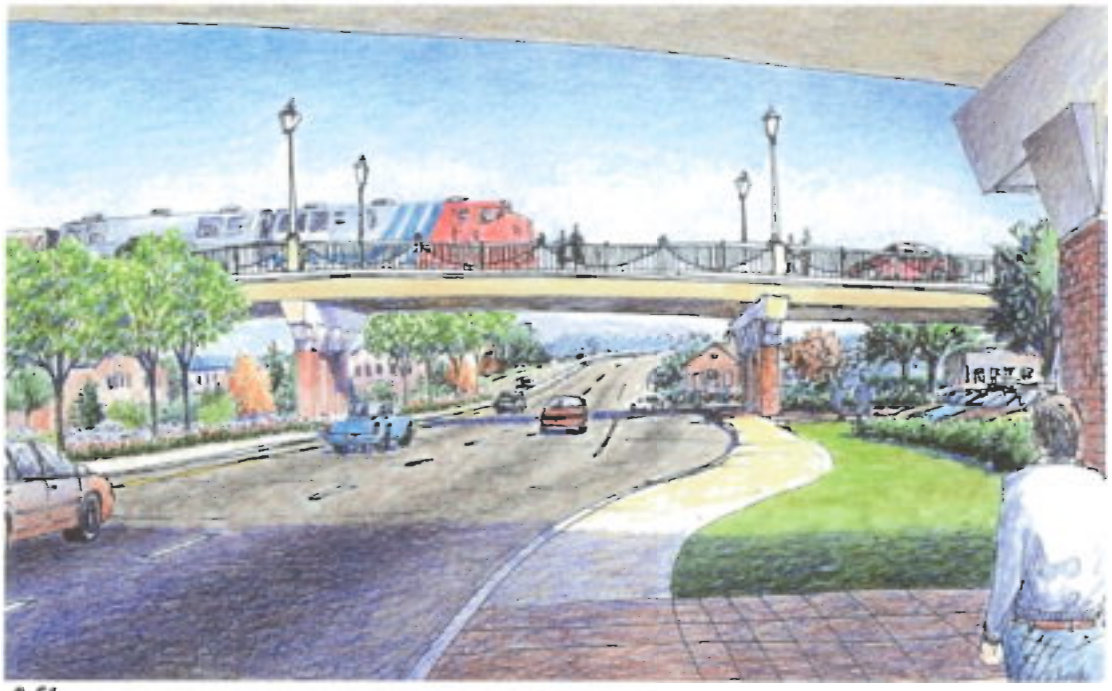
Looking east along Leeman Highway near Washington Street

Bath Feasibility Study
Maine DOT PIN 10123.00

Rendering Option D-1

Figure 32

Before



After

Looking east along Leeman Highway near the Post Office driveway

Bath Feasibility Study
Maine DOT PIN 10123.00

Rendering Option D-4
Rail on Bridge

Figure 33

Before

After

Looking east along Leeman Highway near the Post Office driveway

Bath Feasibility Study
Maine DOT PIN 10123.00

Rendering Option D-4
Rail at Grade

Figure 34

4.4.5. Engineering Feasibility

"C" Options

Based on the conceptual-level design completed for this study, all "C" Options are feasible options in that they could be designed and constructed to satisfy applicable design criteria. In the Commercial Zone, physical constraints to reconstruction of Route 1 are primarily related to right-of-way acquisition, access to abutting properties, and maintenance of traffic during construction.

"D" Options

Based on the conceptual-level design completed for this study, all "D" Options are feasible options in that they could be designed and constructed to satisfy applicable design criteria. In the Downtown Zone, physical constraints to reconstruction of Route 1 are primarily related to right-of-way acquisition, accessing abutting properties, maintenance of traffic during construction, and maintenance of pedestrian corridors during construction.

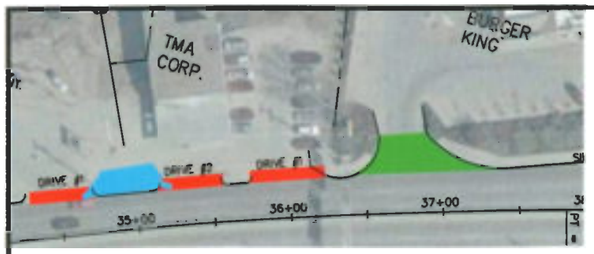
4.5. Access Management Strategies

Access management is an issue in the Commercial Zone of the Route 1 Corridor. There are many land uses along Route 1 that are auto-dependant uses and have multiple access drives to Route 1. Access management along Route 1 can be approached in several ways, including a minimalist approach and an aggressive approach. One approach would minimize the changes to only correct the most serious safety issues. A second, more-aggressive approach could be adopted to maximize the overall efficiency and safety of the roadway. Either of these approaches could be implemented with any of the "C" Build Options or with the No-Build Option.

An access management strategy that is considered a "middle of the road strategy" is illustrated on Figure 35, page 85. This strategy would improve the safety and operation for users of Route 1 while still providing reasonable and adequate access for existing property and business owners. This strategy incorporates driveway closures, consolidation, relocation/reconfiguration, and retention of existing driveways. The access management strategy also complements other corridor upgrade strategies to improve the aesthetics of the area and improve pedestrian safety.

On the north side of Route 1, 14 existing access drives to the southbound roadway would be consolidated to six drives, as described below from west to east:

- Bath Shopping Center @ Station 24+50 – Existing entrance and exit to remain.
- Commercial site stations 25+00 to 28+00 (Reno's Auto Repair and Sales, Citgo gas station/convenience store, Dunkin Donuts, and Car Wash) – Close three of the four drives. The existing drive at the Dunkin Donuts drive-thru will remain. Emphasize entrance/exit off Court Street.
- Car Quest Auto Parts station 31+00 – Close westerly drive and combine the easterly drive with the adjacent residence in a new location.



ALTERNATIVE IF BURGER KING DRIVE IS NOT RELOCATED

NEW/RELOCATE DRIVEWAY
RECONSTRUCT DRIVEWAY
REMOVE DRIVEWAY

100 0 100 200

(FEET)

BATH
City of Ships

DEPARTMENT OF TRANSPORTATION MAINE

BATH FEASIBILITY STUDY

MaineDOT PIN # 10123.00
ACCESS MANAGEMENT
FIGURE 35

- Single family residence – Relocate and combine drive with adjacent Car Quest lot.
- Texaco Gas Station and Car Wash – Both drives to remain. Emphasize driveway to Court Street (remains).
- Office building (previously TMA Corp.) – Close the westerly drive and combine with a relocated easterly drive with Burger King.
- Burger King restaurant – Relocate drive to the west to share with adjacent lot to increase separation from the on-ramp from High Street.
- Apartments parking lot – close drive at on-ramp and use drive on Court Street.

On the south side of Route 1, nine existing access drives to the northbound roadway would be consolidated to four drives, as described below from west to east.

- Former Bodwell Auto Dealership – Close westerly drive and relocate the easterly drive to combine with the adjacent Big Apple/Mobil site. Note that these sites are currently under redevelopment.
- Big Apple/Mobil – Relocate the westerly drive to combine with the Bodwell site and maintain the easterly drive. Note that this site is currently under redevelopment
- Cumberland Farms – Close the westerly drive and relocate the easterly drive to combine with Exxon Gas Station. Emphasize the existing driveway on Cottage Street.
- Exxon Gas Station – Relocate the westerly drive to combine with the Cumberland Farms site and retain the center drive and close the easterly drive on the High Street off-ramp.

To achieve success at access management programs, it is essential to include property owners and business owners in the planning and design process to discuss their specific access needs and operational requirements for existing or potential future business use. This outreach has not been initiated as part of this study; therefore, the access management strategy shown should only be considered a starting point for discussion.

It should be noted that there are also further opportunities for additional access management strategies to complement possible redevelopment of parcels along the southbound side of Route 1 that also front Court Street.

4.6. Pedestrian/Bicycle Considerations

Each of the build options incorporates a more extensive sidewalk network than currently exists. There are differences though in the amount and character of pedestrian connectivity provided.

4.6.1. Pedestrian Considerations

Commercial Zone ('C' Options)

All of the Route 1 Options in the Commercial Zone have the goal of re-orienting this section of the roadway to greatly improve the aesthetics and quality of the area which

would make the area more pedestrian friendly. The options also attempt to create a gateway effect (signal to drivers of a change in character from freeway features to urban/city) through landscaping and roadway design details to slow traffic to the speed limit (currently 35 mph).

Options C-1, C-1 w/Crossover, C-2 and C-3A each provide improved levels of pedestrian access along Route 1 in the Commercial Zone. They also improve the aesthetics of the area through their incorporation of a five foot planting buffer in the roadway cross-section between the roadway and sidewalk. These and other design elements, such as median treatment, are also intended to reduce traffic speeds to be more in line with the speed limit (35 mph), which would also improve the pedestrian environment.

Option C-3A (see Figure 16A and B, pages 36 and 37), through its grade-separated, depressed roadway section, allows the creation of a new signalized intersection at the Bath Shopping Center/Western Avenue intersection with Route 1. This provides new north-south pedestrian access between the south end neighborhoods and the shopping center and north end neighborhoods. Option C-2 (see Figure 15, page 34) would provide a pedestrian crossing of Route 1 via a proposed at-grade signalized intersection at the Bath Shopping Center/Western Avenue intersection with Route 1. Option C-1 (see Figure 13, page 31) would not change, or improve the north-south pedestrian connection; however, Option C-1 w/Crossover (see Figure 29, page 71) would provide this pedestrian connection via the extension of Leonard Court under Route 1.

Downtown Zone ('D' Options)

Option D-1 is a viaduct option (see Figure 17, page 39) which would continue the current configuration of separating through traffic (elevated) from local traffic (at-grade). This option is similar to the roadway and street system that exists today. Enhanced street level sidewalks, crosswalks and aesthetics along the frontage roads (Leeman Highway) would improve the pedestrian environment. North-south pedestrian access is provided at High Street, Middle Street and Washington Street. A newly constructed viaduct presents opportunities to vastly improve the appearance of the viaduct, reducing the physical and visual barrier it currently presents, despite the likely widening of the viaduct from two lanes to four lanes. A new downtown off-ramp from the viaduct to an extension of Commercial Street creates an additional physical and visual presence in the corridor to pedestrians. Option D-1 does not create through-traffic conflicts with pedestrians crossing Route 1.

Option D-2 is an at-grade option (see Figure 19, page 42) which would combine the through traffic and local traffic at ground level. The conceptual cross-section provides enhanced street level sidewalks, crosswalks and aesthetics along Route 1 and at major street crossings (Middle Street and Washington Street). Traffic volumes will require additional turn and through travel lanes that will substantially lengthen street crossing distances (typically seven lanes at intersections) across Route 1 and connecting local streets, negatively impacting pedestrians. Changes in local street connectivity are relatively minor relative to pedestrian movements.

Option D-3 includes a depressed Route 1 (see Figure 20, page 44) which would lower the Route 1 travel lanes to below grade, lower than the local street system. The conceptual cross-section provides enhanced street level sidewalks, crosswalks and

aesthetics along the frontage roads. Option D-3 would eliminate north-south pedestrian access across Route 1 at Middle Street. Pedestrian access at Washington Street would be at-grade over the tunnel at a signalized intersection and provide the only north-south access across Route 1 in the Downtown Zone. This option would not have the Route 1 through traffic conflicts for pedestrians that are present in Option D-2.

Option D-4 is a modified at-grade option (see Figure 21, page 46) which would place the Route 1 through lanes at-grade and create grade-separated crossings at Middle and Washington Streets. North-south pedestrian access across Route 1 is via fairly long bridges (Middle and Washington Streets) that extend well past Route 1. Retaining walls and embankment slopes on the approaches to these structures will negatively impact pedestrian and vehicular access to businesses fronting Washington Street and Middle Street near Route 1. The conceptual cross-section provides enhanced street level sidewalks and aesthetics along Route 1. A pedestrian tunnel through the Sagadahoc Bridge abutment provides additional north-south connectivity for pedestrians. This option would not have the through traffic conflicts for pedestrians that are present in Option D-2.

Option D-5 is a modified depressed Route 1 option (see Figure 23, page 49) which is similar for pedestrians as Option D-3, but it keeps north-south pedestrian access at Middle Street.

Railroad Alignment Options

Options that keep or slightly alter the current alignment of the rail right-of-way through Bath (Railroad Options #3 and #7, see Figure 27, page 55) would have little impact on pedestrians, including the option that would elevate the rail generally along the current alignment (Railroad Option #3).

Relocation of the rail line out of the current right-of-way (Railroad Options #1 and #5, see Figure 27, page 55) provides mixed implications for pedestrians (and bicyclists). The current right-of-way may potentially be available for a shared use path that would provide a bicycle and pedestrian linkage in the north end to the Downtown Bath. However, relocating the rail line on the south side of the (expanded) Route 1 right-of-way would create a barrier to pedestrian movements and would likely eliminate the sidewalk along that side due to the amount of right-of-way required to provide adequate separation. It would also increase the length of a pedestrian crossing over Route 1 in the Commercial Zone due to the need to clear the railroad tracks as well.

4.6.2. Bicycle Considerations

In the Commercial Zone, five-foot paved shoulders are provided along Route 1. With Options C-1, C-1 w/Crossover, and C-2, this shoulder would permit bicycle usage along Route 1 east of the controlled access section of Route 1, which generally terminates in the area of the Bath Shopping Center. With Option C-3A, bicycle access along Route 1 would not be allowed along the depressed Route 1, but would be allowed on the parallel, at-grade frontage roads. Bicycle access across Route 1 in the Commercial Zone would be the same as the pedestrian access provided.

In the Downtown Zone, bicycle access along Route 1 would be provided in the five-foot Route 1 shoulder with Options D-2 and D-4. With Options D-1 and D-3, bicycle access

would be provided in the five-foot shoulder along the surface roadway. With Option D-5, bicycle access along Route 1 would be provided on surface roadways and on the deck over the Route 1 tunnel.

None of the options in the commercial or downtown zones positively or negatively affects the proposed alignment of the Androscoggin-Kennebec Trail, which would leave the Route 1 right-of-way at Congress Avenue.

Chapter 5: Build Strategies

The development and evaluation of individual options for Route 1, the Route 209 Spur, and the Railroad Alignments were described in Chapters 3 and 4, pages 30 and 59. This chapter will address the compatibility of individual options with others and describe packages of improvements, called Build Strategies, which incorporate compatible options for each improvement area into a transportation master plan for the Study Area.

5.1. Option Compatibility

Table 14, summarizes the physical and operational compatibility of the Route 1 "C" Options with the Route 1 "D" Options, the Route 209 Spur Option, and the Railroad Options.

Individual options are considered compatible if, when combined, their physical features do not conflict with one another; i.e., they are options which could be physically implemented together. Additionally, to be considered compatible, options must not have operational conflicts. For example, an at-grade Route 1 Option would not be operationally compatible with an at-grade Railroad Option that crosses Route 1 at-grade.

In some cases, option compatibility cannot be confirmed without additional engineering study and design development. In these cases, compatibility is described as ***Potentially Not Physically Compatible***, for those instances where a physical conflict may exist, or ***Potentially Not Operationally Compatible***, for those instances where an operational conflict may exist.

Table 14 – Compatibility Matrix – Route 1 "C" Options

	Option C-1	**Option C-1 w/Crossover**	**Option C-2**	**Option C-3A**
Option D-1	Compatible	Compatible	Compatible	Compatible
Option D-2	Compatible	Compatible	Compatible	Compatible
Option D-3	Compatible	Compatible	Compatible	Compatible
Option D-4	Compatible	Compatible	Compatible	Compatible
Option D-5	Compatible	Compatible	Compatible	Compatible
Route 209 Spur	Compatible w/ minor modification	Compatible w/ minor modification	Compatible w/ minor modification	Compatible
RR Option #1	Compatible	Potentially Not Physically Compatible	Compatible	Potentially Not Physically Compatible
RR Option #3	Compatible	Compatible	Compatible	Compatible
RR Option #5	Compatible	Potentially Not Physically Compatible	Compatible	Potentially Not Physically Compatible
RR Option #7	Compatible	Compatible	Compatible	Compatible

All Route 1 "C" Options are compatible with all Route 1 "D" Options.

The Route 209 Spur Option is compatible with all Route 1 "C" Options. However, minor modifications would be necessary to Options C-1, C-1 w/Crossover, and C-2, if any of these "C" Options were implemented with the Route 209 Spur. The required modification would be to discontinue the existing Route 1 northbound off-ramp to Leeman Highway and not replace it in its existing location, as proposed with Options C-1 (Figure 13, page 31), C-1 w/Crossover (Figure 29, page 71), and C-2 (Figure 15, page 34). Rather, this movement would be accommodated by a new Route 1 northbound off-ramp to Congress Avenue, as shown for the Route 209 Spur Option on Figure 24, page 51.

Of the final four Railroad Alignment Options (#1, #3, #5, and #7), #3 and #7 are compatible with all Route 1 "C" Options. Railroad Alignment Options #1 and #5 are compatible with Route 1 Options C-1 and C-2. However, Railroad Alignment Options #1 and #5 may conflict with some local roadway connections of Route 1 Options C-1 w/Crossover and C-3A. These local roadway connections are important to the operation of these Route 1 Options. The railroad would be in a moderate cut in the area of its crossings with Richardson Street, Western Avenue, and Leonard Court (see Figure 16A and B, pages 36 and 37 and Figure 29, page 71). Detailed engineering studies would be necessary to confirm that the vertical alignments of the railroad and these local roadways are compatible. On the basis of the conceptual alignments developed for this feasibility study, it appears that the vertical alignments can be made compatible.

Table 15 summarizes the compatibility of the Route 1 "D" Options with the Route 1 "C" Options, the Route 209 Spur Option, and the Railroad Options.

Table 15 – Compatibility Matrix – Route 1 "D" Options

	Option D-1	**Option D-2**	**Option D-3**	**Option D-4**	**Option D-5**
Option C-1	Compatible	Compatible	Compatible	Compatible	Compatible
Option C-1 w/ Crossover	Compatible	Compatible	Compatible	Compatible	Compatible
Option C-2	Compatible	Compatible	Compatible	Compatible	Compatible
Option C-3A	Compatible	Compatible	Compatible	Compatible	Compatible
Route 209 Spur	Compatible	Compatible	Compatible	Compatible	Compatible
RR Option #1	Compatible	Potentially Not Operationally Compatible	Compatible	Potentially Not Operationally Compatible	Compatible
RR Option #3	Not Compatible	Compatible	Compatible	Potentially Not Operationally Compatible	Compatible
RR Option #5	Compatible	Potentially Not Operationally Compatible	Compatible	Potentially Not Operationally Compatible	Compatible
RR Option #7	Compatible	Not Compatible	Compatible	Not Compatible	Compatible

All Route 1 "D" Options are compatible with all Route 1 "C" Options and with the Route 209 Spur Option.

Route 1 Option D-1 (Figure 17, page 39) is compatible with three of the final four Railroad Alignment Options (#1, #5, and #7). The at-grade rail crossings of Washington Street and Middle Street provided under Railroad Alignment Options #1 and #5 will occasionally disrupt traffic flow on these streets. However, Route 1 traffic flow will not be affected because Route 1 is elevated on a viaduct. Although Route 1 Option D1 is compatible with Railroad Alignment Options #1 and #5, it would not be necessary to implement Railroad Alignment Options #1 or #5 with Route 1 Option D-1 in order to achieve grade separation of the railroad and Route 1. Route 1 Option D-1 is not compatible with Railroad Alignment Option #3, because, if implemented together, it would result in an "at-grade" crossing of Route 1 and the railroad, considered a "fatal flaw." The "at-grade" crossing would be on an elevated viaduct, which is highly undesirable.

Route 1 Option D-2 (Figure 19, page 42) is compatible with Railroad Alignment Option #3. Route 1 Option D-2 is not compatible with Railroad Alignment Option #7 which, if implemented together, would result in an at-grade railroad crossing of Route 1. Route 1 Option D-2 is potentially not operationally compatible with Railroad Alignment Options #1 and #5. Although they are physically compatible, they may not be operationally compatible for the following reason. Combining Route 1 Option D-2 with Railroad Alignment Options #1 or #5 would require at-grade railroad crossings of Washington Street and Middle Street. Therefore, train movements would occasionally disrupt traffic flow on these streets. Since Route 1 is at-grade under Option D-2, traffic stoppages on Washington Street and Middle Street due to train movements could potentially disrupt traffic flow on Route 1. The level of disruption can only be determined with forecasts of train movements, which were not generated as part of this study.

Route 1 Option D-3 (Figure 20, page 44) is compatible with all of the final four Railroad Alignment Options (#1, #3, #5, and #7). Although Route 1 Option D3 is compatible with Railroad Alignment Options #1, #3, and #5, it would not be necessary to implement these Railroad Alignment Options with Route 1 Option D-3 in order to achieve grade separation of the railroad and Route 1. At-grade railroad crossings of Washington Street and Water Street would be required with Railroad Alignment Options #1 and #5. This will result in occasional disruption to traffic flow on these streets, but this will not affect traffic flow on Route 1.

Route 1 Option D-4 (Figure 21, page 46) is potentially not operationally compatible with Railroad Alignment Option #3 because, if implemented together, would result in an "at-grade" railroad crossing with Washington Street that would be elevated on a viaduct. This is considered a potentially undesirable condition, depending on final approach grades on Washington Street. Route 1 Option D-4 is not compatible with Railroad Alignment Option #7 which, if implemented together, would result in at-grade railroad crossing of Route 1, considered a "fatal flaw." Option D-4 is potentially not operationally compatible with Railroad Alignment Options #1 and #5. Although they are physically compatible, they may not be operationally compatible for the following reason. Combining Route 1 Option D-4 with Railroad Alignment Options #1 or #5 would require an at-grade railroad crossing of Water Street, to which new Route 1 northbound on- and off-ramps are proposed. Therefore, train movements would occasionally disrupt traffic

flow on Water Street. Since Route 1 is at-grade under Option D-4, traffic stoppages on Water Street due to train movements could potentially disrupt traffic flow on Route 1. The level of disruption can only be determined with forecasts of train movements, which were not generated as part of this study.

Route 1 Option D-5 (Figure 23, page 49) is compatible with all of the final four Railroad Alignment Options (Option #1, #3, #5, and #7), however it would not be necessary to implement Railroad Alignment Options #1, #3 or #5 in order to achieve grade separation of the railroad and Route 1. At-grade railroad crossings of Water Street will occasionally disrupt traffic flow on Water Street. Traffic queues may extend onto the proposed Washington Street on-ramp to Route 1 northbound, but this is not anticipated being a safety or congestion problem.

The Route 209 Spur Option is compatible with all of the final four Railroad Alignment Options (Options #1, #3, #5, and #7). With Options #1 and #5, the railroad alignment would cross the Route 209 Spur near Congress Avenue, requiring grade separation.

5.2. Build Strategies

Options C-1 and C-1 w/Crossover are the only Route 1 "C" Options advanced into the Build Strategies and for further analysis. Options C-1, C-1 w/Crossover, and C-2 rated closely at 33, 36, and 33 points, respectively (see Table 12, page 76) highest among the Route 1 "C" Options. However, Option C-2 is dismissed from further evaluation in the Build Strategies because it would not be consistent with current MaineDOT access management policies by providing a median break and four-way signalized intersection at the Bath Shopping Center where currently only right turns are allowed. In addition, another option, Option C-1 w/Crossover, would provide the same benefits as Option C-2. At 28 points, Option C-3A rated lower than the other "C" Options with respect to several community goals such as aesthetics and property impacts, and would cost between $10-12 million (approximately 2.5 to 4 times) more than the other options. Therefore, Option C-3A is dismissed from further evaluation in the Build Strategies.

Options D-1 and D-4 are the only Route 1 "D" Options advanced into the Build Strategies for further analysis. These options rated highest among the Route 1 "D" Options at 35 and 40 points, respectively (see Table 13, page 80). The remaining Route 1 "D" Options, Options D-2, D-3, and D-5, rated 29, 30, and 30 points, respectively. In addition to the overall low ratings, other overriding negative aspects of these options include: Option D-2's at-grade intersections of Route 1 would not be consistent with current MaineDOT access management policies; Option D-3 rated very poorly in several important community goals – aesthetics, community visibility, and north-south connectivity; and, Option D-5's cost of $77.89 million, which is between 2 and 6 times more costly than the other Route 1 "D" Options, is viewed as prohibitive.

Railroad Alignment Options #1, #3, #5, and #7 are the only railroad options advanced into the Build Strategies. Rated between 22 and 28 points, these options rated considerably higher than the other railroad options, which rated no higher than 13 points (see Table 4, page 65).

Based on the ratings of options, overall engineering feasibility, compatibility of options, and cost, four Build Strategies have been identified. The combination of various Route 1

and Railroad options that comprise the Build Strategies are tabulated in Table 16, page 94 along with their total estimated costs, with and without a Route 209 Spur.

Table 16 – Build Strategies

	Build Strategy A	Build Strategy B	Build Strategy C	Build Strategy D
Option C-1	√	√		
Option C-1 w/ Crossover *			√	√
Option C-2				
Option C-3A				
Option D-1	√		√	
Option D-2				
Option D-3				
Option D-4		√		√
Option D-5				
RR Option #1		√ or		√ or
RR Option #3		√ or		√ or
RR Option #5		√		√
RR Option #7	√		√	
Estimated Cost	$44.42m	$41.35-45.25m	$46.42m	$43.35-47.25m
Cost With Route 209 Spur	$49.42m	$46.35-50.25m	$51.42m	$48.35-52.25m

* Assumes $2 million additional cost for Crossover related costs over the cost of Option C-1
m = millions; costs are in 2003 dollars

Build Strategy A combines Route 1 Options C-1 and D-1 with Railroad Alignment Option #7 into a package that is fundamentally similar to the existing condition. However, design features are improved to meet current design guidelines, traffic capacity is increased to meet future travel demand, accessibility to Downtown Bath is improved, aesthetics and gateway features are improved and pedestrian and bicycle accommodations are improved. Like the existing condition, a signalized four-way intersection would not be included at the Route 1 intersection with the Bath Shopping Center in the Commercial Zone. Like the existing conditions in the Downtown Zone, Route 1 would be carried on an elevated viaduct, and the railroad would be maintained at-grade with Leeman Highway, although on a slightly modified alignment. The total estimated cost of Build Strategy A is $44.42 million in 2003 dollars, or $49.42 million with the Route 209 Spur.

Build Strategy B combines Route 1 Options C-1 and D-4 with any of the three Railroad Alignment Options #1, #3, or #5. The primary difference between Build Strategies B and A is in the Downtown Zone, where Route 1 would be at-grade, with controlled access via on- and off-ramps. With Route 1 at-grade, it is necessary to either relocate or grade-separate the existing railroad line. Railroad Alignment Options #1 and #5 would relocate the rail line, while Railroad Alignment Option #3 would grade-separate the rail line. The costs of these different rail options are of similar magnitude, ranging from $20.9 million to $24.8 million. A major concern with Railroad Alignment Options #1 and #5 is the

severe property impact that would occur on the south side of Route 1. Further assessment of the potential transportation benefits accrued by restoring passenger rail in the corridor versus the adverse property impacts is needed. It is noted that Railroad Alignment Option #1 would reduce track distance in the Railroad Study Area by 0.85 miles, while Railroad Alignment Option #5 would reduce track distance in the Railroad Study Area by only 0.07 miles. An unresolved issue with Railroad Alignment #3 is the practicality of relocating the rail tracks from the lower deck to the upper deck of the Carlton Bridge. Since Railroad Alignment Option #3 would not reduce track distance in the Railroad Study Area, further assessment of the potential transportation benefits accrued by restoring passenger rail in the corridor versus the practicality of modifications to the Carlton Bridge is needed. The total estimated cost of Build Strategy B would range from $41.35 to 45.25 million in 2003 dollars, depending on which Railroad Alignment Option is implemented, or $46.35 to $50.25 million with the Route 209 Spur.

Build Strategy C would provide the same options (Route 1 Option D-1 and Railroad Alignment Option #7) as Build Strategy A in the Downtown Zone, but would use Option C-1 w/ Crossover instead of Option C-1 in the Commercial Zone. Build Strategy C would provide all the same benefits as Build Strategy A, plus the crossover would provide improved accessibility across Route 1 at an added cost of approximately $2 million. The total estimated cost of Build Strategy C is $46.42 million in 2003 dollars, or $51.42 million with the Route 209 Spur.

Build Strategy D would provide the same options (Route 1 Option D-4 and Railroad Alignment Options #1, #3, or #5) as Build Strategy B in the Downtown Zone, but would use Option C-1 w/ Crossover instead of Option C-1 in the Commercial Zone. Build Strategy D would provide all the same benefits as Build Strategy B, plus the crossover would provide improved accessibility across Route 1 at an added cost of approximately $2 million. Build Strategy D also would have the same issues and concerns in the Downtown Zone as Build Strategy B. The total estimated cost of Build Strategy D would range from $43.35 to 47.25 million in 2003 dollars, depending on which Railroad Alignment Option is implemented, or $48.35 to $52.25 million with the Route 209 Spur.

Chapter 6: Recommendations

Following distribution of the Draft Bath Feasibility Study report to the Steering Committee in March, 2005, the Study Team conducted three meetings between April and July, 2005: a final Steering Committee meeting; a public informational meeting; and, a City Council presentation were held to receive comment as input to the Study Team in formulating final study recommendations.

Input received at the last Steering Committee meeting is summarized as follows:

1. The Steering Committee concurs with the screening of options as presented and summarized in the four Build Strategies.
2. The Steering Committee indicated a preference for Build Strategy C, which consists of Option C-1 w/Crossover, Option D-1, and Railroad Option #7.
3. In the Commercial Zone, the Steering Committee indicated strong opinions that a wide landscaped median is important to traffic calming and aesthetics along this section of Route 1. A concrete median barrier is highly undesirable from the perspective of traffic calming and aesthetics.
4. In the Commercial Zone, the Steering Committee prefers Option C1 w/Crossover because it provides north-south connectivity for both pedestrians and vehicles.
5. In the Downtown Zone, the Steering Committee supports Option D-1 and does not support Option D-4. Some members of the Steering Committee believe that the Evaluation Matrix-Route 1 "D" Options (Table 13, page 80) ratings for Option D-4 related to aesthetics, community visibility, cultural and historic preservation are too favorable.
6. For the Route 209 Spur, the Steering Committee concurs that the Route 209 Spur should not be advanced as an effective measure in altering the roadway needs in the Route 1 Corridor. Any further advancement of the Route 209 Spur should be based on its own merits, and thus is not recommended at this time.

Input received at the public informational meeting is summarized as follows:

1. Of those expressing an opinion, there was consensus that Build Strategy C, without a Route 209 Spur, should be advanced in the project development process.
2. Comment was made that if a Route 209 Spur were studied at some point in the future, other alignments, including a longer spur further south of the developed areas of the City of Bath should be evaluated.

Input received from the Bath City Council is summarized as follows:

1. The City Council supports elements of Build Strategy C, specifically advancing Option D-1 in the Downtown Zone and not advancing the Route 209 Spur at this time.
2. In the Commercial Zone, several City Councilors expressed concern with the provision of north-south connectivity for vehicular traffic, as provided by Option C-1 w/Crossover. There was unanimity in the opinion that north-south connectivity across Route 1 is needed for pedestrians, but not necessarily for vehicular traffic. At the point in time when improvements in the Commercial Zone are advanced in the project development process, further dialogue is needed within the community and with MaineDOT regarding Option C-1 and Option C-1 w/Crossover to confirm community desire for the vehicular connection between the north and south sides of Route 1.

Recommendations

Based on the findings of the Bath Feasibility Study and input from the Steering Committee, Bath City Council, and the general public, Build Strategy C, without a Route 209 Spur, is the recommended strategy for the Route 1 Corridor in the City of Bath. Build Strategy C consists of Option C-1 w/Crossover in the Commercial Zone, Option D-1 in the Downtown Zone, and Railroad Option #7 in the Downtown Zone.

Based on the fact that the Bath Viaduct is nearing the end of its structural life, a major rehabilitation or replacement is needed within the next 10-15 years. Projected traffic volumes warrant widening of the Bath Viaduct to four lanes, as shown for Option D-1. Option D-1 (see Figure 17, page 39 and Figure 18, page 40) would provide a four-lane Route 1 roadway facility elevated on a viaduct. Two 12-foot travel lanes and a five-foot paved shoulder would be provided in each direction, undivided. In addition, a proposed northbound off-ramp from the viaduct would provide new access to Commercial Street, BIW, and the downtown area. An additional lane on the viaduct for this off-ramp is recommended to begin over Middle Street and separate from the viaduct over Washington Street. This elevated off-ramp would cross over Water Street, continue south of the Rockland Branch rail line and transition to connect with a proposed extension of Commercial Street. This off-ramp and the proposed Commercial Street Extension would be located on land currently owned by BIW and used for parking.

The High Street Bridge over Route 1 would require replacement. The existing pier locations would be in conflict with the proposed Route 1 pavement layout. Additionally, a wider bridge would be required to accommodate the turning lanes on High Street. The High Street intersection with the Route 1 off-ramp and Granite Street would be signalized with turning lanes, sidewalks, and crosswalks. Travel lane and shoulder widths for the local street network would be dependant on local street guidelines and municipality standards. Five-foot paved shoulders would be recommended to accommodate bicyclists. On-street parking would be provided on Front Street and Water Street to the north.

Widening to each side of Route 1 and Leeman Highway would be necessary. Vertical grades up to 5% were proposed along this section of Route 1, including the proposed northbound off-ramp. This is consistent with existing viaduct grades.

In the Commercial Zone, regional mobility needs are being met by the existing facility. Therefore, advancement of improvements to Route 1 in the Commercial Zone must be at the initiative of the City of Bath. At the point in time when further consideration of improvements in the Commercial Zone occurs, further dialogue is needed within the community and with MaineDOT regarding Option C-1 and Option C-1 w/Crossover to confirm community desire for the vehicular connection between the north and south sides of Route 1.

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APPENDIX A
List of Technical Memoranda

Subject	Date
Compendium of Natural Resources Technical Memoranda:	
Floodplain Inventory	3/5/2004
Natural Resources Technical Memorandum	3/18/2004
Compendium of Social and Economic Technical Memoranda:	
Community Facilities Inventory	3/4/2004
Context Sensitive Design Solutions	5/20/2004
Corridor Context: Physical and Visual Character Analysis	5/20/2004
Economic Development - Existing	4/7/2004
Neighborhood and Community Cohesion	3/17/2004
Public Park and Recreation Inventory	3/5/2004
Right of Way and Property Inventory Preliminary Impacts and Estimated Acquisition Costs	3/8/2004
Right of Way and Property Inventory Crossover for C-1 Preliminary Impacts and Estimated Acquisition Costs	11/22/2004
Sensitive Noise Receptor Inventory	3/5/2004
Uncontrolled Petroleums and Hazardous Material Inventory	3/5/2004
Zoning, Land Use, Future Development Inventory and Main Street Bath	3/17/2004
Economic Development - Build Option	4/2/2004
Compendium of Transportation and Engineering Technical Memoranda:	
Access Management - Existing Conditions	5/26/2004
Access Management - Potential Strategies	5/26/2004
Base Case Traffic Conditions - Operational Analysis	3/30/2004
Conceptual Structural Engineering	3/18/2004
Cost Estimates - Roadway	3/18/2004
Cost Estimates - Railroad Alignment Options	11/26/2003
Engineering Information Inventory	3/17/2004
Future Traffic Conditions - Operational Analysis	2/18/2005
Roadway Design Criteria	3/18/2004
Multimodal Passenger Transportation System: Existing	3/26/2004
Multimodal Passenger Transportation System: Future	3/26/2004
Rail Alignment Options	4/8/2004
Railroad Design Criteria	3/30/2004
Traffic Data Collection	1/26/2004
Travel Demand Modeling: Current Year & Future Year Base Conditions; Build Strategies Volumes	4/6/2004
Utilities Information	3/17/2004

APPENDIX B
Photo Images of the Route 1 Study Corridor

VISUAL AND CHARACTER ANALYSIS:

The following are supporting images for the analysis summary text (Section 2.9, page27):

Image 1:

The first 'View from The Road' on Route 1 northbound and City of Bath gateway sign. Congress Ave. Bridge is shown in the middle of the photo.

Image 2:

Route 1 northbound at the Commercial Zone – the corridor is separated by metal beam guard rail and chain link fencing.
Bath city limits.

Image 3:

Route 1 northbound at the Commercial Zone – multiple curb cuts, roadway signs and utility poles and wires inundate the landscape in the Commercial Zone. Cottage Ave. is shown at right of photo.

Image 4:

Route 1 northbound leaving the Commercial Zone and entering the Downtown Zone – Route 1 continues up on an elevated structure (known as the Bath Viaduct) and exit to Historic Downtown Bath is to the right. High St. Bridge is shown in the center of the photo.

Image 5:

Route 1 northbound at the Downtown Zone – view of Bath Iron Works facilities – BIW is a substantial landmark in the city and the landscape.

Image 6:

Route 1 northbound leaving the Downtown Zone and the City of Bath – view of the Carlton Bridge on the right and the parallel Sagadahoc Bridge on the left.

Image 7:

Route 1 southbound and entering the City of Bath – gateway signing is not present, but views of the Historic Downtown Bath are extensive.

Image 8:

Route 1 looking north from the High St. overpass. Plant outcroppings have occurred along the Route 1 right-of-way.

Image 9:

Route 1 southbound from vicinity of Elsinore Ave. Adjacent businesses front onto the Route 1 corridor.

Image 10:

Leeman Highway northbound below "the Bath Viaduct" as referred to the elevated viaduct structure of Route 1.

Image 11:

The Sagadahoc Bridge connecting the City of Bath and Town of Woolwich, facing the east side of the Kennebec River from the City of Bath.

Image 12:

Pedestrian crossing mid-block, outside of defined crosswalk in foreground, Vine Street and Water Street.

Image 13:

Landscape outcroppings serving as screening of Route 1 to the adjacent neighborhood. Vehicles in photo are on the southbound on-ramp to Route 1 from High Street.

Image 14:

Wooden planter boxes located underneath the Bath Viaduct.

Image 15:

Local businesses back up to the waterfront – looking north on Commercial Ave. from under the Sagadahoc Bridge

Image 16:

Bath Waterfront Park.

Image 17:

Wayfinding signs located beneath the Route 1 Bath Viaduct provide direction to local cultural amenities.

Image 18:

Streetscape elements found in Historic Downtown Bath, Front and Broad Street.